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ARCHITECT & CONSTRUCTOR

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Ninety-Eighth Year.

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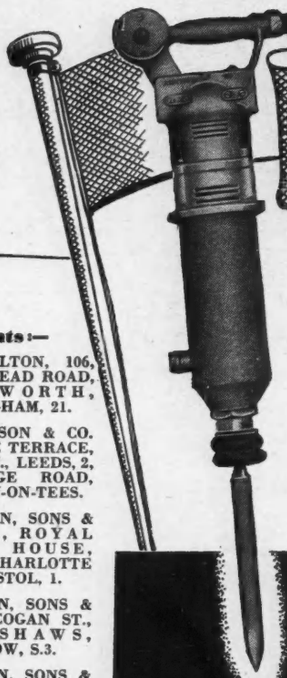

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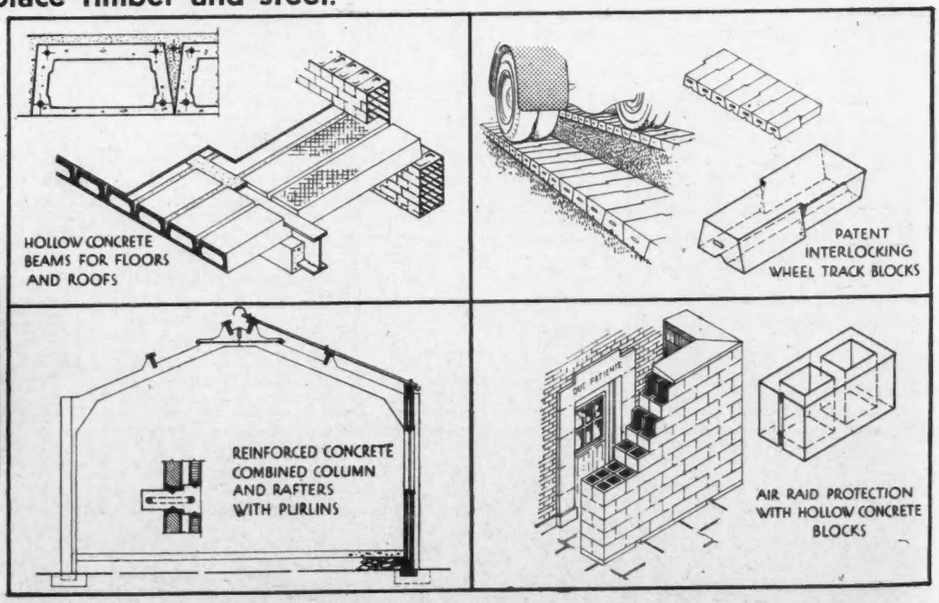
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THE BUILDER

INCORPORATING

"ARCHITECTURE" AND "THE BRITISH ARCHITECT"

VOL. CLIX SEPTEMBER 13 1940 No. 5093

AIR RAID SHELTERS.

AS we record elsewhere in this issue, the A.R.P. Co-ordinating Committee has asked Sir John Anderson to receive a deputation on September 16 on the question of a change of official policy with regard to air raid shelters. With the development of indiscriminate bombing by the enemy the question of shelters becomes of major importance, particularly in view of the long-drawn-out nature of the raids, which are likely to become longer with the increasing hours of darkness.

Even apart from this aspect of enemy activity, the onset of winter makes some reconsideration of shelter policy desirable. A correspondent of *The Times* asks, very aptly, what the Anderson shelters will be like in the winter with a temperature of perhaps 10 degrees below freezing? Writing as a medical man, he points out that sitting in an air raid shelter for hours under this condition will give rise to much illness and chest complaints. Also people will undoubtedly try to make their shelters as warm as possible and will probably take in some form of heating apparatus, such as oil lamps and stoves, or perhaps coke braziers, involving the risk of death from carbon monoxide poisoning. It may be possible to devise some form of heating apparatus, possibly a small stove with a chimney attached, which would eliminate this danger, and we trust that this question is receiving the serious consideration of the Home Office.

In any case, present circumstances bring to a head the long-drawn-out controversy on Shallow versus Deep shelters. With the increasing intensity and persistency of bombing, apart altogether from winter conditions, people may conceivably become dissatisfied with shelters that give protection from blast and splinters only. Many, no doubt, taking all the factors into consideration, will prefer to remain in their houses and abandon any form of reasonable protection.

This ought not to be allowed to happen. If at this late time of the day it is possible to make any drastic change in shelter policy, the Haldane shelter, which is of the " two-stage " type, might well be considered, since it is claimed that it can be rapidly constructed to be blast- and splinter-proof and then strengthened to be bomb-proof. The Government, we understand, has approved the shelter in principle.

We are glad to note that the deputation to which we have referred proposes to raise the question of the priority system in connection with the supply of materials, especially of steel and cement (bricks ought not to be overlooked). There ought not to be any shortage of cement and bricks after more than twelve months of war.

J. D. M. Harvey, *delt.*

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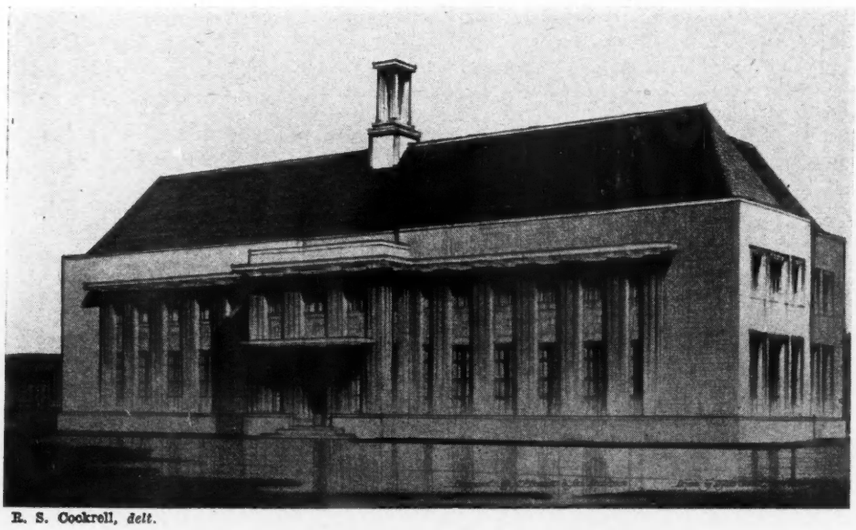
TWO DESIGNS FROM THE ROYAL ACADEMY EXHIBITION



R. S. Cockrell, *delt.*

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NOTES AND NEWS

Exhibition at the A.A.

On Monday, September 16, an exhibition, arranged by the Hull School of Architecture on the "Scalby Reception Centre, 1940," will open at the Architectural Association's premises, 34, Bedford-square It is the work of the co-operative research group of the Hull School of Architecture, showing the planning for temporary war-time requirements on a basis of permanent peace-time social and educational needs. A system of building in prefabricated concrete construction is recommended, and the accommodation is based upon the requirements of the persons evacuated to Scalby under the Government scheme, September, 1939. The scheme was illustrated in this journal for April 26 last. The exhibition is open until September 28.

Londonderry's City Walls as Shelters.

A proposal has been made to utilise the ancient city walls of Londonderry for the construction of air-raid shelters. On the instructions of the Corporation the City Surveyor has had a trench opened up in the surface of the walls in order to study the construction, and has made a report which will be submitted to a special committee appointed to go into the matter. The idea is to remove the earth which has fallen down between the walls, and replace the roadway which runs around the wall top with a surface of thick concrete. A number of shelters would then be constructed at intervals. The work, however, would be carried out in such a way that no permanent interference would be caused to the fabric of the walls, and restoration would be simple after the war.

Londonderry (writes a correspondent) is the only completely walled city in Ireland, and has only one rival in the United Kingdom, the city of Chester. Although not so picturesque as the walls of Chester, Derry's walls are much thicker, and to this day their surface is used as a thoroughfare. They owe their fame to the historic siege of Derry, and are vested in the Honourable the Irish Society of London, of which the governor is the Lord Mayor of London.

Chartered Surveyors' Examinations.

Provisional arrangements have been made for the Preliminary and Special Test examinations of the Chartered Surveyors' Institution to be held in January, 1941, and the professional examinations in March, 1941. Applications to sit for the examinations can be accepted on the appropriate forms (obtainable from the Acting Secretary) up to the end of September. This extension of time has been given to meet the case of those candidates whose examination results for this year have been somewhat delayed owing to the "staggering" of the dates.

The Institution of Sanitary Engineers.

The Institution of Sanitary Engineers announce that, owing to the present phase of the war, the Organising Committee have felt compelled to defer the holding of sessional meetings for the time being, a decision with which the President has announced his agreement. The meeting fixed for September 27, at which Col. Mackenzie had offered to read a paper on "Water Sterilisation—the Choice of Method," has therefore been cancelled, but it is hoped that the paper will be printed in a subsequent issue of the Institution's Bulletin.

Building Trade Workers' Bravery.

Mr. George Hicks, M.P., general secretary of the Amalgamated Union of Building Trade Workers, gave some account in a recent broadcast of the manner in which building operatives and labourers are acquitting themselves in the war. Despite constant air attack, he said, they have worked on coast defences, and while bombs were dropping all round have unloaded mines and dug front-line trenches as enemy planes dived and machine-gunned. He told of one who, when a section of construction work was hit and a fire started, volunteered to unload a magazine in the blaze. After doing it he returned through the fire and saved his "dumper."

An Appointment.

Mr. K. C. Iliffe has been appointed Borough Engineer of Deptford. He is 31.

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IN 1915

Extract from *The Builder*, September 10.

A number of architects and art craftsmen now take turns in watching St. Paul's at night to deal with any outbreak of fire. There are the regular night watchmen on duty there, but members of the profession with their professional knowledge of the structure and its special points of danger in fire would be able to give valuable assistance in quelling it.

*** The St. Paul's Watch (as stated in our issue for August 30, when a photograph of the Watch was included) is again in being. The value of its services has been thrown into greater prominence by the events of this week. We understand that further recruits to the Watch would be welcomed by the Surveyor to the Fabric.

THE "TWO-STAGE" SHELTER

A.R.P. CO-ORDINATING COMMITTEE'S DEPUTATION TO SIR JOHN ANDERSON.

The A.R.P. Co-ordinating Committee has asked Sir John Anderson to receive a big deputation on September 16, at which representative bodies from many parts of the country will urge points which the committee believe to be extremely urgent if terrible and unnecessary loss of life from bombing attacks is to be avoided.

The main proposals which it is intended to put forward are as follows :—

(1) The widespread and immediate construction of the "two-stage" type of shelter advocated by the committee and now christened "the Haldane shelter." The essential feature of this type of shelter is that it can be rapidly constructed to be blast- and splinter-proof and then strengthened to be completely bomb-proof. The Government, although approving it, has taken no steps whatever to press forward with the construction of the shelters.

(2) A complete overhaul of the warning system so as to avoid the frequent recurrence of what is now a widespread experience—bombs unheralded by any warning. Big changes must be made if the badly shaken confidence in the ability of the sirens to give an adequate time to seek shelter is to be restored.

(3) Reframing of the machinery of the A.R.P. scheme generally, and, in particular, reconstituting the office of the Regional Commissioners, so that the local authorities have adequate representation. This is essential if difficulties arising from the administration of A.R.P. are to be overcome.

(4) An immediate adjustment of the "priority" system and the taking of other necessary steps to ensure that supplies, especially of steel and cement, are made available for shelter construction.

Although the committee has only just announced its intention of organising the deputation, it has already been assured of co-operation by local authorities and important Trade Union bodies. The large and representative Northumberland and Durham A.R.P. Co-ordinating Committee, which can speak for some 350,000 people, has promised its full support.

The committee is anxious that the deputation shall be as fully representative as possible. It therefore invites local authorities, trade unions and, indeed, all bodies who can express the views of people in their homes or at work, and from every part of the country, to express to the committee general support for all or any of the proposals to be put forward, and, if possible, to appoint representatives to attend the delegation.

Inquiries should be addressed to the Secretary, A.R.P. Co-ordinating Committee, 85, Beechwood-road, Sanderstead, Surrey.

NOTES.

The following may be obtained from the Secretary of the Committee :—

Pictorial representation of the shelter mentioned above, 1s. each, post free.

Plan of the shelter mentioned above and diagram illustrating the "dispersal" fallacy, 2s. 3d. each, post free.

Memorandum submitted to Sir John Anderson on December 14, 1939, on the principles of constructing "two-stage" shelters, 6d. each, post free.

Memorandum on the new evacuation scheme submitted to the Minister of Health and the President of the Board of Education on April 3, 1940, 6d. each, post free.

Report on a Survey of the Shelter Position in this Country (May, 1940), 6d. each, post free.

The Committee keeps files of Press cuttings on A.R.P. matters. Anyone desirous of referring to the files should communicate with the Secretary of the Committee.

COMING EVENTS

Monday-Saturday, September 16-28.—Architectural Association. Exhibition arranged by the Hull School of Architecture on the "Scalby Reception Centre, 1940"

Thursday, September 19.—Architecture Club. Supper Discussion on "How Shall We Plan Our Buildings for Life After the War: On Our Holidays?" Charing Cross Hotel. 7.45 p.m.

Tuesday, September 24.—Housing Centre. Tuesday Lunches: Miss E. Moberly Bell on "Octavia Hill." 1 p.m.

WAR-TIME BUILDING PRACTICE

By R. Cotterell Butler, A.R.I.B.A.

28.—INDUSTRIAL PLANNING AND DESIGN.

—FACTORIES AND WORKSHOPS: PRINCIPLES OF LAYOUT.

THE ARCHITECT'S CONTRIBUTION.

The continuation of the war-material and export drive is an essential part of the war effort, one might say almost the most essential part. To meet the needs of a vastly expanded and still expanding engineering industry, with in addition a parallel expansion in many allied trades, considerable reorganisations of existing factory facilities, as well as the development of new industrial units, have become necessary. The architect's training as a designer enables him to contribute much to the success of such industrial development, not only by ensuring the erection of a structurally economic and efficiently planned factory or workshop, but, as is less generally realised, by co-operating in the first instance with the industrialist to determine the most efficient sequence of operations as well as the best accommodation for carrying them out.

The architect has (or should have) a fully developed ability to co-ordinate operation with circulation, enabling him in co-operation with the industrialist (who naturally fully appreciates the technical side of production) to arrive at the most efficient layout for the multitude of component operations which constitute a manufacturing process.

Potentially, the architect should be an efficiency expert, and although many are sadly lacking in the capacity to approach a problem objectively, and so much so that one shudders at the thought of their being foisted on an already overworked industry, nevertheless there are in this country many architects who by training and ability are capable of contributing towards a great increase in efficiency in the engineering and allied industries. In order to help the industrialist properly to organise or reorganise his production arrangements, and to decide the best accommodation available, it is not necessary (and is, in fact, undesirable) that the planner should be fully conversant with all the technicalities of production. If this should be the case, which is naturally unlikely, the planner's outlook may be handicapped by too detailed an appreciation of minor considerations, and the balance of his judgment is liable to suffer. However, he must possess a knowledge of the essentials involved, and a mind flexible enough to recognise further essential factors as and when they crop up. It is not a fallacy to suppose that competent architects plan good kitchens, notwithstanding their ignorance of the finer points of cooking, but rather because of this ignorance. A logical mind, a balanced judgment, and a capacity to sift essentials from non-essentials and to dissuade a client from following up an unimportant line of approach and consequently unbalancing the scheme of things, are even more valuable in industrial than in domestic practice.

It is hoped that the following notes and diagrams will help to introduce to the architect some of the most important factors involved in industrial planning, and to present them in such a way that a logical perspective of their relative importance may be developed. Too architectural an approach to industrial problems is fatal; a subjective preoccupation with form, capable of damaging the best of schemes, and a tendency to over-emphasise any particularly exciting aspect of a problem are possibly the most dangerous tendencies of all.

THE PRODUCTION FACTORY.

The majority of the industrial work involved in the manufacture of munitions and other war material, and to an almost equal extent in the manufacture of goods for export, is what is generally termed "production work." This fact has a most important bearing upon the type of accommodation required, its general arrangement and layout.

"Production factories" are concerned with the manufacture of standardised products on a mass-production basis, and are essentially routine organisations, being ones in which the controlling factors may be assessed and allowed for to a considerable degree. This means that there is little excuse for low efficiency for, unlike organisations concerned with maintenance or repair work, "unknowns" do not have to be contended with to the same extent.

Before an article or a component is finally put into production, a vast amount of care and attention is expended in carefully standardising its elements, preparing the clearest and most efficient of working drawings, and selecting the best type of machines and processes and the appropriate type of labour to operate them. Over a number of years, and particularly immediately before the slump when manufacturing organisations had paid the greatest attention to the production side of their businesses as opposed to the sales side (that is, before it was found that the increase in production efficiency had outstripped the salesman's capacity for disposing of the manufactured goods), this aspect of industry had been developed to a remarkable degree. Modern sales technique has made it still more necessary to attempt a high level of production-efficiency, and if all this energy is not to be wasted, unnecessary time-lag due to poor or indifferent planning must be eliminated.

This is where the planner comes, or should come, in. As has already been pointed out, the planner's job need not and should not end when he has settled his entrances and exits, and provided suitable parking space!

In analysing the relationship between the expenditure of effort and the return obtained, the efficiency expert classifies the work carried on in a factory under two headings: *Production* and *Service*. Production time is spent in actually processing or assembling a component, and service time in checking, conveying from one part of the works to another, and so forth. For maximum efficiency, both service and production must be equally efficiently organised, but owing to poor planning this is rarely the case, the efficiency of production being almost invariably much higher than that of service. Such a situation is all the more unsatisfactory since service is a large proportion of the total industrial process.

MACHINE SHOP OR ASSEMBLY SHOP.—The more efficient any two manufacturing organisations producing dissimilar products are, the greater is likely to be the difference in the layout of the factories involved, and yet to very many people the words "standardisation" and "factory building" seem to be inseparable. Efficient industrial units may, therefore, be expected to differ considerably in layout and arrangement; nevertheless, a number of basic factors do constitute a certain

typical theme upon which the layout of most industrial works is based.

The terms "workshop" and "factory" have been purposely avoided up to now since, to prevent confusion, they require some definition. Essential stages in the production of a commodity are (*a*) the manufacture of component parts; and (*b*) their assembly. Factories vary considerably inasmuch as in some instances both manufacture and assembly may be carried out in the same works, while in others either manufacture or assembly may be the primary function. Thus, very many of the factories, both large and small, engaged upon the production of war materials are primarily concerned with the manufacture of components for subsequent assembly in Government or other large works, while radio and similar factories consist essentially of assembly shops, most of the components being acquired ready-made.

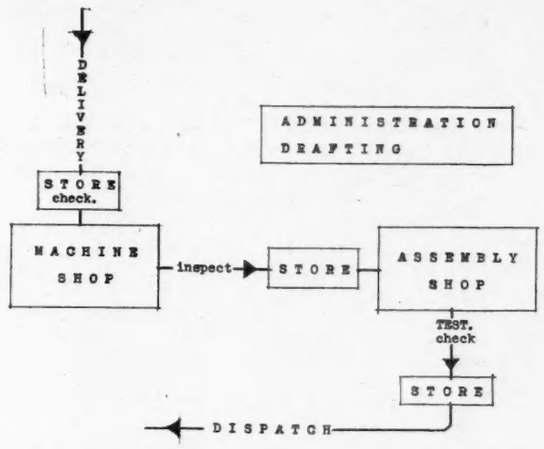


Diagram 1. Basic Operation Sequence of Typical Factory.

DIAGRAM 1 indicates the basic elements of any factory insofar as no indication of the relative importances of the machine shop and assembling units is given. It should be noted that administrative and drafting departments are not so directly connected with the manufacturing sequence as are the other elements, these latter having their sequence indicated by arrows.

DIAGRAMS 2 and 3 indicate, respectively, a machine shop engaged in the production of components, and an assembly factory. The differences in balance between the various elements should be compared, and—while it must be remembered that many variations are bound to occur in any one case—it is essential that the planner or replanner endeavours to grasp the essentials of the balance as soon as possible.

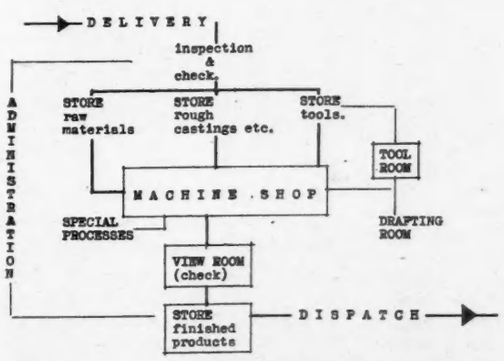


Diagram 2. Typical Machine Shop Factory.

STORES.—The most critical lines of communication occur in connection with the various store departments, and this is probably the second most important factor to take into consideration.

Store requirements need consideration at three distinct points in the production sequence.

1. RAW MATERIAL STORES.—Directly connected with the reception part of the works, these must provide space for raw materials of the unfabricated type such as sheet rod or bar material, as well as rough castings, forgings or stampings ultimately to be finished in the machine shops.

2. COMPONENT STORES.—Here will be stored those components which arrive on the works finished ready for assembly, and, in addition, the store will act as a reservoir for components manufactured in the machine shop also awaiting assembly. The latter requirement might appear unnecessary, and this would be the case if the output of the machine shop could always be perfectly synchronised with the assembly shop. In practice this frequently seems to be impossible, and in numerous factories much inconvenience and waste of time, and consequently loss of efficiency, results from the dumping arising out of this factor.

3. FINISHED GOODS STORE.—Essentially a part of the dispatch department, the finished goods store must be connected with the test shops, if any, or other checking accommodation.

In most factories, certainly those of any size, the storekeeper is a highly specialised operative, and in countless instances his work is needlessly complicated through lack of sound storage accommodation enabling easy checking.

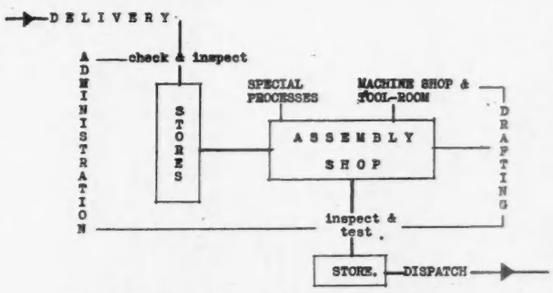


Diagram 3. Typical Assembly Factory.

INSPECTION AND CHECKING.—Accommodation for inspection (for accuracy and quality) must be provided between shops along the path of the finished product, as well as at the delivery end of the works and at the test shop. One of the commonest circulation errors to be found in factories seems to arise out of bad co-ordination of storeroom and view-room. In frequent instances, commodities have to be shifted quite needlessly from shop to view-room and from view-room to store, this error of planning being particularly noticeable in works having undergone considerable expansion. Certainly this is one of the most frequent disadvantages which the efficiency expert is called upon to overcome.

SPECIAL PROCESSES.—Certain processes (either owing to their technical nature or to their being "nuisances" through their noise or fumes) must be accommodated away from other shops, yet as efficiently in the production stream as possible. Here is a problem which is typical of many to be met with in planning practice. No different in fact from trying to arrange both dining-room and drawing-room equally accessible from a domestic hall, yet at the same time properly orientated.

So much, then, for the general outline of the problem; the other planning factors involved, such as siting arrangement, problems of access and provision of administration accommodation and, of course, services for personnel, are more or less straight architecture, and points with which most architects are already fully conversant.

One of the most important aspects of the war programme is the employment of peace-time factories and workshops on war production, and many industrialists seem to be sadly in need of a trained planner to help them to obtain an efficient changeover reorganisation. In a subsequent article it is hoped to discuss one such more-or-less typical instance, and to try to point out some of the snags most likely to be encountered.

(To be continued.)

Subjects previously dealt with in this series are :—

- **"The Field of Activity," October 13.**
- **"Billeting Accommodation," November 3, 10, 17.**
- **"Development of Materials and Constructional System as Substitutes for Timber," December 8 and 15 and January 12.**
- **"Roof Construction for Emergency Building Purposes," February 9, 16, and 23.**
- **"Black-Out: Current Technical Considerations." I.—March 8. II.—March 15.**
- **"Social Service Units for Emergency Communities," March 29. April 12, 19, 26. May 17, 31. June 14, 21.**
- **"Substitutes for Timber and Metal for Non-Structural Building Components," May 24.**
- **"Emergency Construction for Post-War Re-Assembly," June 28, July 12.**
- **"Emergency Schools," July 19, 26, and August 16.**
- **"Surface Finishes for 'Alternative Materials,'" August 30**

Copies of these issues may be obtained from the Publisher, 4, Catherine Street, Aldwych, W.C.2.

CORRESPONDENCE

[While we are glad to publish letters on professional and other matters of interest to our readers, it must be understood that we do not necessarily endorse the remarks of correspondents, who will oblige us if they will express their views as briefly as possible.]

Preserving the Countryside.

To the Editor of *The Builder*.

Sir,—I think most Englishmen will agree that the prevention of building factories and residences in the countryside during the past few years by town planners has proved to be a thoroughly bad policy. It is time that the town planners were swept aside and the architects were given control of the problem.

It is estimated that plans for about 200,000 houses and factories in the country have been rejected by town planning officers during the past few years. There are many cases of London officials (who were sent to the provinces to supervise munition works) submitting plans for a proposed new residence about three miles from a town, only to have them rejected by town planners, who tell them that they must build in a town, as the countryside is to be preserved.

Then there are cases of working men buying an acre plot in the country hoping to retire there, only to find that the plan is rejected, because the countryside must be preserved, and because local landowners dislike the small type of bungalow in the vicinity.

Further, enlightened and humane business men have submitted plans of factories to be built in charming country scenery, and so remove the workers from the depressing slums and mean streets, only to have them rejected by town planners, who tell them to go back to a town and build there; pretty views must not be spoilt.

Looking into the reasons guiding this policy of preserving the countryside, one asks "Preserve it for whom?" and one is forced to admit that it is to be preserved for fox-hunting and shooting, and to provide pretty views for the motorist. All these reasons are unworthy from a national point of view.

Anyone who has attended meetings of the R.I.B.A., the Chartered Surveyors' Institution and the Town Planning Institute will have noticed an air of sanity, dignity and responsibility in the two former. At the meetings of the last there is a different air—there is the feeling of enthusiasm, a feeling that they are the evangelists leading the country to a better life. But it may be that they are leading the country on the wrong road. The Council of the Town Planning Institute and its policy are too closely connected with the officials of the Ministry of Health.

It would be far better for prominent architects to be given complete control of town and country planning and to relegate the present town planners to the background.

E. Rossiter.

Lancashire.

*** We do not agree with some of our correspondent's remarks. The evil consequences of a lack of planning control over building development in the past are already seen in far too many areas, particularly in the Home Counties and around urban centres generally. If the amenities of the countryside are to be preserved for the enjoyment of the people, unrestricted building must be stopped, though, of course, there can be no objection to properly planned development under the direction of competent architects and town planners.—Ed.

St. Giles's, Cripplegate, and Ecclesiastical Tudor.

To the Editor of *The Builder*.

Sir,—The lamentable, though fortunately not more serious, damage to St. Giles's Church, Cripplegate, raises an interesting question as to the development and chronology of ecclesiastical Tudor architecture, which on the whole is little removed from the so-called "late perpendicular" of the end of the fifteenth century. It has always been accepted (notably in Francis Bond's "Westminster Abbey," 1911) that Henry VII's Chapel marks the brilliant climax of mediæval church architecture, though Bond argued also that only historical accident, and not inherent exhaustion, prevented it from being developed further. It is not generally realised that several churches were, in fact, built after this before Renaissance design became established, and make the undoubted non-development in question the more remarkable. In London alone, after the Westminster shrine's completion in 1519 (ten years after the death of the seventh Henry buried within it), there was St. Andrew Undershaft, Leadenhall-street, 1520-32; then the gloomy St. Peter ad Vincula on Tower Green, built by 1532; then, after a long lull, St. Giles's itself, just after 1545—the first two during Katherine of Aragon's long consortship, the last in that of Katherine Parr, the fortunate surviving queen. There are probably other churches in the provinces, and smaller features, particularly fonts, abound—all in a merely simplified and somewhat coarsened version of the previous century's art.

H. V. Molesworth Roberts.

OBITUARY

W. Fishwick.

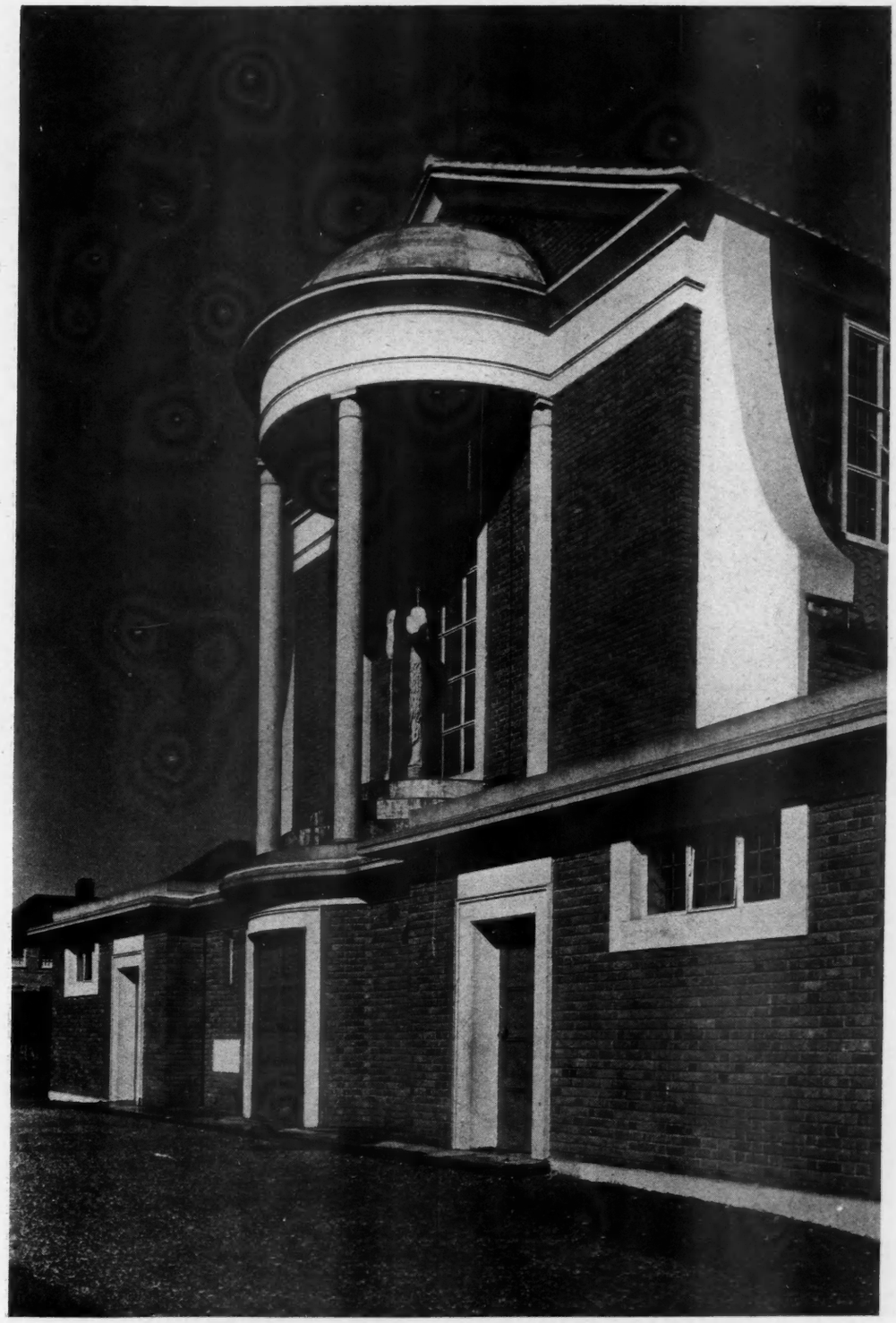
The death is announced, at the age of 73, of Mr. William Fishwick, quantity surveyor, of Manchester. His was the oldest established practice in the city of Manchester, having been founded by Mr. Rickman in the early days of Mr. Alfred Waterhouse, nearly a hundred years ago. The firm "took the quantities" for Manchester Town Hall. Mr. Rickman was succeeded by Mr. William Windsor with whom Mr. Fishwick worked all his life either as assistant or as partner until he succeeded him on his death many years ago. His son, who joined him as a partner, will carry on the work. He "took the quantities" for many important buildings, including Owens College, the Faculty of Arts Building, Ashburne Hall, the new Library, and the Dental Hospital. He also worked on the new buildings for the Manchester Royal Infirmary, and for the main subsequent additions such as the new Nurses' Home and the Private Patients' Home, besides much work at Oxford University.

Charles P. Sherwin.

Mr. Charles Proctor Sherwin, whose death is reported at Tynemouth, was housing architect with Tynemouth Corporation from 1919 to 1930. He was afterwards in practice as an architect on his own account in North Shields, but for the past two years he had been architect for schools built for Felling Urban Council. He was hon. secretary of Tynemouth Antiquarian Society.

The London Society.

The new President of the London Society, the Rt. Hon. the Viscount Esher, will preside at the opening of an Exhibition of "Railings for Scrap" at the Society's premises at Lancaster House, St. James's, S.W.1, on Wednesday, September 18, at 3 p.m. The Exhibition (which will be on view for two weeks, excepting Saturdays and Sundays, from 10-4), will be opened by Mr. George Wood (Director of Scrap Supplies, Ministry of Supply). Admission is free.



DETAIL VIEW OF WEST END.

CHURCH OF ST. JOHN THE BAPTIST, TOTTENHAM.

MESSRS. SEELY AND PAGET, ARCHITECTS.

THE NAVE, LOOKING EAST.

CHURCH OF ST. JOHN THE BAPTIST, TOTTENHAM.

SITE: The site for this church was an open rectangular piece of rising ground, reserved for the purpose when the hall was built some years ago. It has a frontage to the Great Cambridge-road on the west side, and to narrow streets on the north and south, the east side being occupied by the hall.

PLAN: Although of ample width, the site was a little short in length; consequently the vestries and chapel were placed on the sides of the building, and the choir and organ, instead of occupying the usual place in the chancel, were placed in a west gallery. This gallery was not built against the west wall, but made to fly across the nave one bay from the west, the end bay forming a narthex in which the font was placed. The body of the church is of the usual passage-aisle type, so that no pillars obstruct the view of the altar.

CONSTRUCTION: In construction, the church consists of elliptical-arched frames in reinforced concrete at 18-feet spacing, with no structural division between nave and chancel. Between the frames is a brick panel wall to the aisles, and to the clerestorey a panel wall of hollow tiles covered on the outside with sheet copper. The roofs are of timber rafters resting upon reinforced concrete purlins and covered with boarding and pantiles. The ceilings are of "Hy-rib" and plaster. The chapel, vestries and porches are grouped towards the west end under a flat roof of reinforced concrete covered with insulating board and asphalt.

The west front has a tall portico, semi-circular on plan, of concrete pillars crowned with a semi-dome covered with copper. Under the portico, on a podium, rests a statue of St. John the Baptist, carved in Portland stone by Eric Doudney. The outside of the church presents a striking appearance, with its rich mulberry-coloured brickwork, ivory-white concrete buttresses, and turquoise-blue copper covering of the dome and clerestorey. The copper was treated by the I.C.I. process to give the colour, and was very successful.

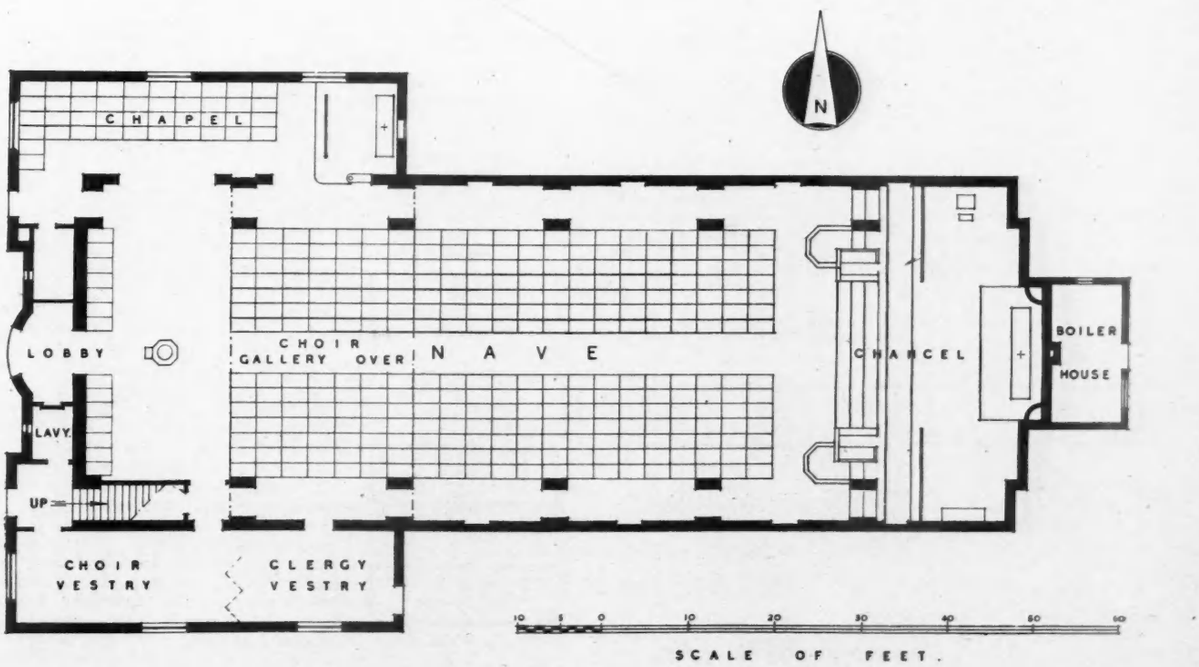
The architects are the Hon. John Seely, F.R.I.B.A., and Mr. Paul Paget, A.I.A.A., whose war-time office is at 16, Coulsdon-road, Coulsdon, Surrey, and the general contractors were Messrs. T. H. Kingerlee and Sons, Ltd., of Oxford, who also made the furniture to the architects' design.

The principal sub-contractors were: Reinforced concrete design and "Hy-rib," The Trussed Concrete Steel Co.; heating, Drake, of Egham; electric wiring and deaf aids, Newing, of Tottenham; cork flooring, Cork Insulation Company, Smithfield; masonry, Bysouth, of Tottenham; chairs, Andrew Bentley, Ltd., of Glengall-road, S.E.15; carpets, dorsal curtain, candlesticks, Heal and Son, Ltd., Tottenham Court-road, W.1; and metal windows, James Gibbons, of Wolverhampton.

VIEW FROM SOUTH-WEST.

CHURCH OF ST. JOHN THE BAPTIST, TOTTENHAM.

MESSRS. SEELY AND PAGET, ARCHITECTS.



PLAN.

R.I.B.A. INDUSTRIAL HOUSING COMPETITION

WINNING DESIGN IN HOUSING SECTION

ILLUSTRATED in these pages is the winning design, by Miss J. G. Ledeboer and Mr. George Fairweather, AA.R.I.B.A., in the Housing Section of this competition. Following are points from their report:—

GENERAL.—The scheme provides splinter- and blast-proof sleeping accommodation for industrial workers, in the form of single-storeyed shelters, to be converted in peace time, by the addition of an upper storey, into two-storeyed houses suitable for working-class families.

CLASSES OF LABOUR.—Variation in accommodation has been made for the different classes of labour. The industrial worker is recruited from among men and women, boys and girls, each having different accommodation requirements. These have been met by adaptations of the same standard structural unit.

ACCOMMODATION.—The common requirement is for splinter- and blast-proof sleeping accommodation and necessary sanitary arrangements. These have been designed within a standard three-bays structural unit. Two bays are devoted to the sleeping cubicles, and these are completely protected under A.R.P. requirements. The third bay of the unit is planned for the necessary sanitary accommodation and for a small sitting-room or lounge, where reading and writing can be done. This last bay has been provided with standard glazed windows covered with wire mesh, giving light and air into the unit without damaging the A.R.P. properties of the sleeping cubicles.

This common standard has been adapted to suit the following classes of labour (see Accommodation Key Plan on this page).

A. Adult Male.—In the standard unit, beds have been provided for eight men in four cubicles, with locker accommodation. It is unlikely that more than one man will be sleeping in the cubicle at the same time, as they will be working in shifts. The cubic contents of the cubicle (432 cubic ft.), therefore, should be reckoned for one person only. In the third bay is a w.c. and a washing trough with cold water laid on. Hot water for shaving would have to be heated on the boiler, but as full washing facilities are provided at the wash-house, it is unlikely that hot water will be required.

B. Adult Female.—The accommodation is similar to that of the men, except in so far as the cubicle area is larger. It was felt that the women would require greater privacy. (Cubic contents of cubicle = 288 cubic ft.) Six women can be housed in the unit.

C. Juvenile Males.—A large number of boys aged from 16-20 are being employed in munition factories, and it has been found desirable to organise group accommodation for them. The ideal number for a group is about 60. A leader is in charge of the boys.

For supervision purposes the structural unit has been adapted to this accommodation by forming terrace groups of six units, the passage way in between forming adequate protection against blast between the blocks. In this manner sleeping berths are found for 60 boys. It has been found desirable to provide a larger recreation room for each group, and the structural unit, as an empty shell, forms an excellent recreation room, situated adjacent to the terrace block. This recreation unit forms one bungalow type if built attached to the married couples' unit (see Type E). The leader of the boys' house should be given accommodation here.

D. Juvenile Females.—The terrace unit as for boys can be arranged to accommodate 42 girls. Again the recreation room leader type bungalow should be attached.

E. Married Couples.—Accommodation for married couples both of whom are working has been provided for in bungalow form and carried out, except in so far as the bedroom is protected, entirely as if for normal peace-time conditions, when this form of accommodation will still be required. The total area of 400 sq. ft. is divided into living-room, bedroom, bathroom and kitchen with tools and bicycle store.

This same unit could be used by a married couple with one or two small children where the wife is not working. The larger family unit has not been contemplated in this programme, as besides accommodation for children, questions of school accommodation would have to be considered.

General.—Accommodation has been provided for about 1,500-1,700 workers, the number varying according to the class of worker.

ACCOMMODATION IN PEACE TIME.—The structural unit can be converted into a three-bedroom type house in peace time by the addition of another storey.

Living-room.	215 sq. ft., provided with open fire.
Kitchen.	75 sq. ft., fitted with boiler for hot water, and copper.
Bedroom 1.	138 sq. ft.
Bedroom 2.	122 sq. ft.
Bedroom 3.	78 sq. ft.

The accommodation provides for a couple with three children. The terrace units are similarly adapted. On the first floor the party wall is placed over the centre of the passage on to concrete flooring, and bedroom accommodation rearranged accordingly. The bathroom is placed on the first floor.

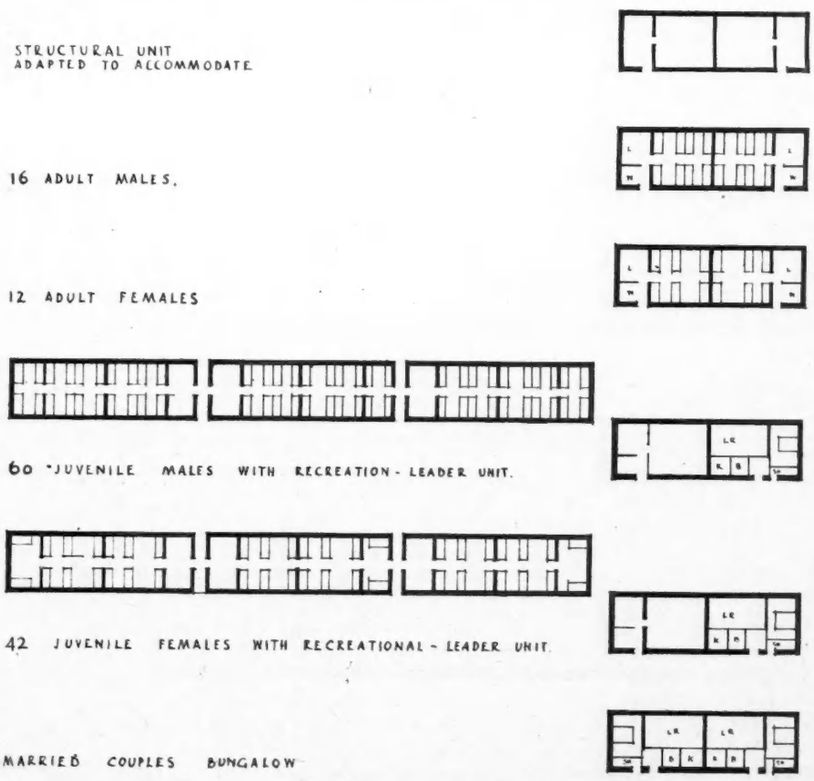
CONSTRUCTION.

THE WALLS.—All external walls are to be brick built and 13½ in. thick. They are to be faced with selected common bricks. All window openings are to be formed at the outset and where these are to be built up for the duration of the war a rebate will be formed on the outer face to give a key-like hold for the brick infillings. The brick filling will be executed with cheap bricks, and where it joins the window reveals, sand bedding will be incorporated and lime pointing used. Light-locked ventilating devices will be installed in the infilling panels and steel reinforcing rods will fasten the upper region to the main body of the permanent structure. Where these rods are installed, hollow clay blocks will be bonded into the brickwork, and to cut the reinforcement when removing the infilling panels it will be necessary to break down the uppermost block which forms the inner lining thickness of the ventilator.

To modify the danger of general collapse of the walls or roof by separation at the eaves junction, steel rods reinforce the connection at intervals of three feet all round the sleeping enclosures. These rods are embodied in the concrete of the roof slab and built into the cavities of clay block units which are incorporated in the brickwork for the purpose. All internal walls which separate the sleeping enclosures from unprotected rooms and all main dividing walls within the protected areas are of 9-in. brickwork, and all other permanent partitions are of 3-in. hollow clay blocks.

THE FLOORS.—The ground floor is built of concrete laid over a bed of hardcore. A damp-proof interlayer will be incorporated in the concrete thickness unless the nature of the subsoil will allow for its omission. The upper floor (or roof of the war-time building) is a 4-in. thick concrete slab *in situ*. The slab is supported at intervals of 9 ft. by the main external and internal walls, and by a beam in the middle of each sleeping enclosure. The clear span of each slab bay measures 8 ft. 3 in., and as this standard is applied throughout the whole of the scheme the maximum use can be made of standard shuttering.

As an alternative to *in situ* construction, it is suggested that some advantage might be gained by the use of a precast concrete unit which provides the tensional reinforcement only. An inverted "tee beam" unit or a variation of the "U" unit may be capable of use in this way, and a solid filling of site-laid concrete would strengthen the slab against compression and give the required resistance to light projectiles from the air.


STRUCTURAL UNIT
ADAPTED TO ACCOMMODATE
A. 16 ADULT MALES.
B. 12 ADULT FEMALES
C. 60 JUVENILE MALES WITH RECREATION - LEADER UNIT.
D 42 JUVENILE FEMALES WITH RECREATIONAL - LEADER UNIT.
E MARRIED COUPLES BUNGALOW

ACCOMMODATION KEY BLOCK

R.I.B.A. INDUSTRIAL HOUSING COMPETITION. WINNING DESIGN IN HOUSE SECTION.
BY MISS J. G. LEDEBOER AND MR. GEORGE FAIRWEATHER, AA.R.I.B.A.

The upper surface of the roof slab is graded to the required levels by means of an application of lime and ashes. This would be removed easily when the upper floor structure is to be added. The falls are graded to a point above each washing space in the plan, and in this way gutters are not required. The roof is protected by a two-ply application of bituminous felt.

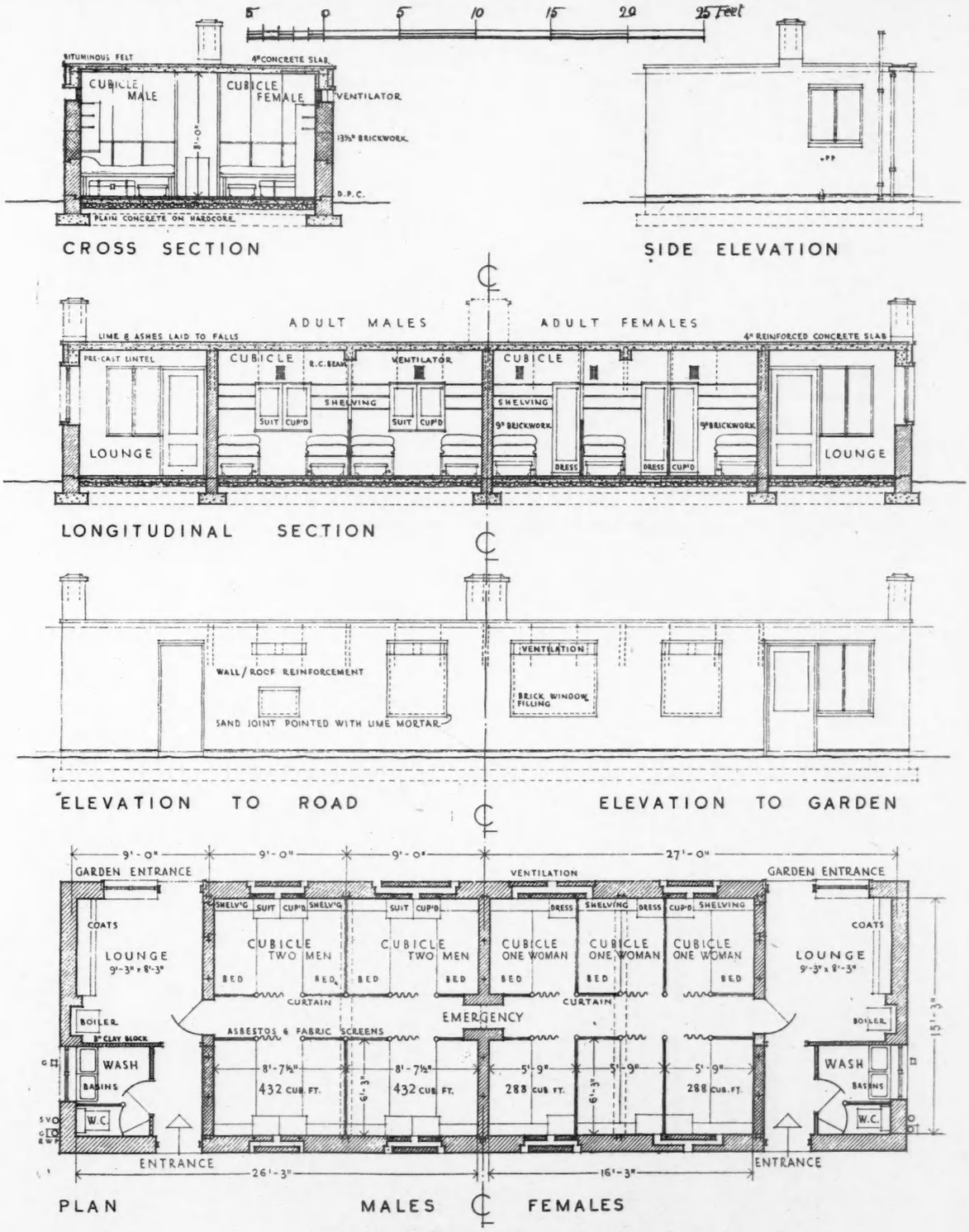
Provision is made in the roof construction for the removal of that part of the roof which covers the staircase of the peace-time plan by the insertion of a dividing slip.

THE WINDOWS.—The windows are to be of standard metal section built directly into the brick reveals. The glazing may be of wired glass, or of clear sheet glass, and protection against splinter may be gained by fitting wired screens on the inside. The peace-time installation of windows will rely on a concrete frame to fill the rebates formed in the brickwork, but otherwise will be the same as the present.

THE SITE.

COMMUNITY BUILDINGS.—The necessary communal buildings, *e.g.*, the community centre, the wash-house and the canteen, have not been planned together in a single building in view of the danger from air attack. They have been placed at a distance from each other, but connected with a covered way. The surrounding area has been developed as garden, and the area immediately north of the buildings should be laid out as sports ground.

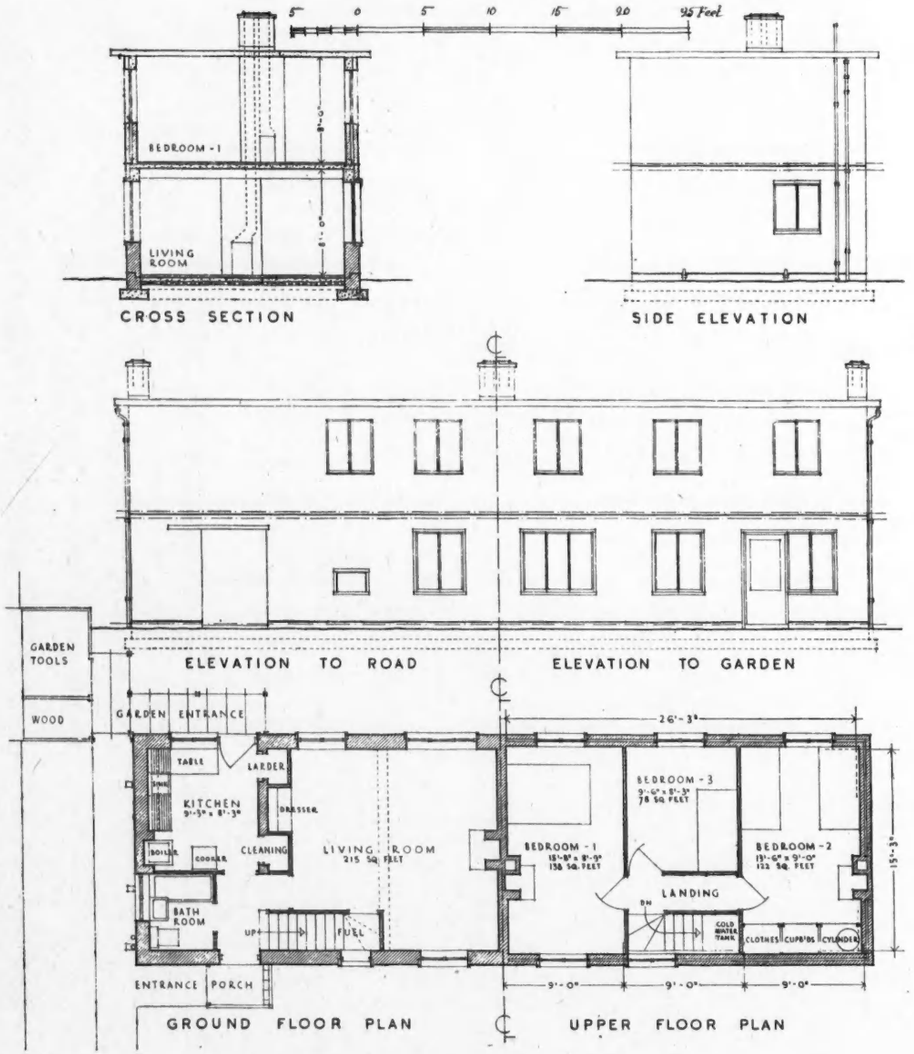
HOUSING.—The housing has been placed on a site of about 34.2 acres, of which 4.2 acres has been given up as open space on the south side of each block. The definite orientation of the standard house type forbade its use on a southerly aspect to the road, and where this occurs it has been omitted, though 32 houses of a reorientated type could be added in peace time if required. A total number, therefore, of 262 houses have been provided for on 30 acres, making an average of 8.7 houses to the acre, including road and ancillary open space.



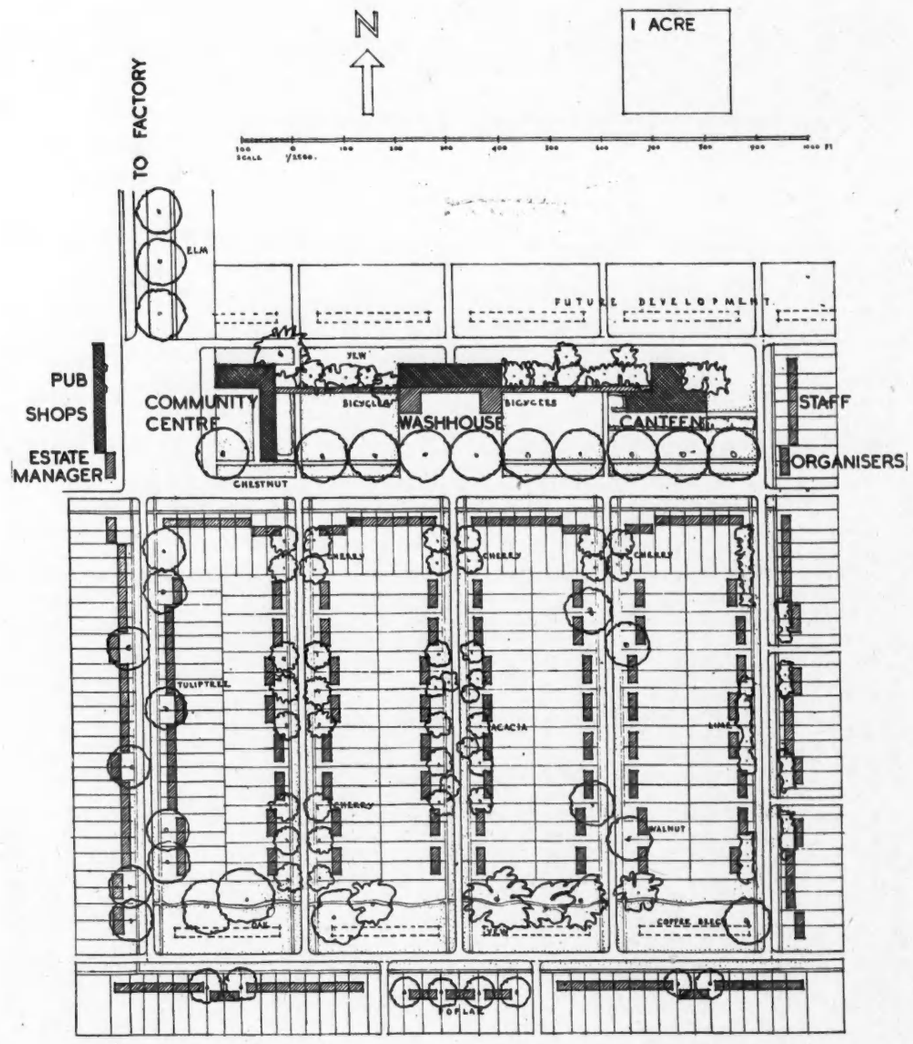
ARRANGEMENT FOR WAR-TIME UTILISATION.

R.I.B.A. INDUSTRIAL HOUSING COMPETITION. WINNING DESIGN IN HOUSE SECTION.

BY MISS J. G. LEDEBOER AND MR. GEORGE FAIRWEATHER, AA.R.I.B.A.



WINNING DESIGN : RE-ARRANGEMENT FOR PEACE-TIME USE.



ESTATE LAYOUT. (THIS DOES NOT FORM PART OF PRIZE AWARD.

R.I.B.A. INDUSTRIAL HOUSING COMPETITION.

BY MISS J. G. LEDEBOER AND MR. GEORGE FAIRWEATHER, AA.R.I.B.A.

R.I.B.A. Industrial Housing Competition.

THE REPORT OF THE COMMITTEE.

THE Committee's award in this competition—in which 159 sets of drawings were considered—was given in our last issue. Illustrated in this issue are the designs placed first and second in the Housing section and that placed first in the "Estate Plan" group. Following is the text of the Committee's Report:—

WE are gratified by the response, and by the high standard and variety of the entries. Without departing from requirements, the premiated designs are carried outstandingly further than the lead given in the conditions.

The following are the general principles upon which awards have been made:—

(a) That the post-war estate population remains static or decreases; but will *not* necessarily increase.

(b) That a different standard of comfort is permissible in war than in peace time.

(c) That the post-war proposals are capable of achievement simply and are of a high standard.

The House.

Plan.—Broadly, there are four principal types of plans:—

(a) Those containing A.R.P. shelter separated from sleeping-rooms.

(b) The ground floor only built in war time and wholly or in part protected.

(c) Complete house built and protected.

(d) Bungalow wholly or in part protected and temporarily used for denser occupation.

We consider that reasonable protection for sleepers in any new houses or living quarters is paramount, but at the same time we realise that a first-floor storey, being highly vulnerable to blast, is incapable of economic protection. We are agreed that in the classification referred to above, type (b) holds the more practical solutions of the problem in view of the general requirements of most schemes, accordingly type (b) has received the primary awards.

Type (d), the bungalow, solves the difficulties of a decrease in population where the post-war standard of comfort may rise without additional building; and this theme has been pursued by one competitor sufficiently to justify a special award.

In both these categories a number of plans encourage the hope that the houses of the future will not necessarily follow the old plan types but tend towards affording a more open planning, in which room convenience, furniture sizes and arrangements are better understood. The compressed accommodation of rigid compartments might give way to more adequate floor spaces served by convenient fitments and by enclosed service units of maximum efficiency.

Within the scope of type (b) are the following arrangements:—

(1) A standard ground-floor family plan, with temporary bedroom accommodation alone strengthened.

(2) A standard ground-floor plan either wholly or in part strengthened, and flexible for use either as hostel or family dwelling (with or without collaboration with its neighbours).

(3) A war plan designed as a hostel only. By itself the hostel is inadmissible, since the problem of family transference is part of the competition.

Windows.—Total protection to sleepers depends upon special treatment of windows. There now appears to be sufficient justification for blocked-up windows, provided there is adequate ventilation. Apart from protection, there is the advantage of a possible reduction in sound disturbance and infringement of black-out.

General Construction.—The position as regards materials supply fluctuates in war time (one material may be in short supply for a time and then become available) that adaptability for various methods of construction is better than reliance upon one material. It has been assumed that no carcassing timber but a certain quantity of steel will be available.

The official code for air-raid shelters has been accepted as a guide to protection.

Camouflage.—This has been regarded as a regional problem and is considered in the Estate Plan.

Architectural Character.—Many schemes, whether premiated or not, are of particular architectural distinction. One such design is No. 76, where the author has made a contribution to the art and standard of living beyond the scope of present possibility.

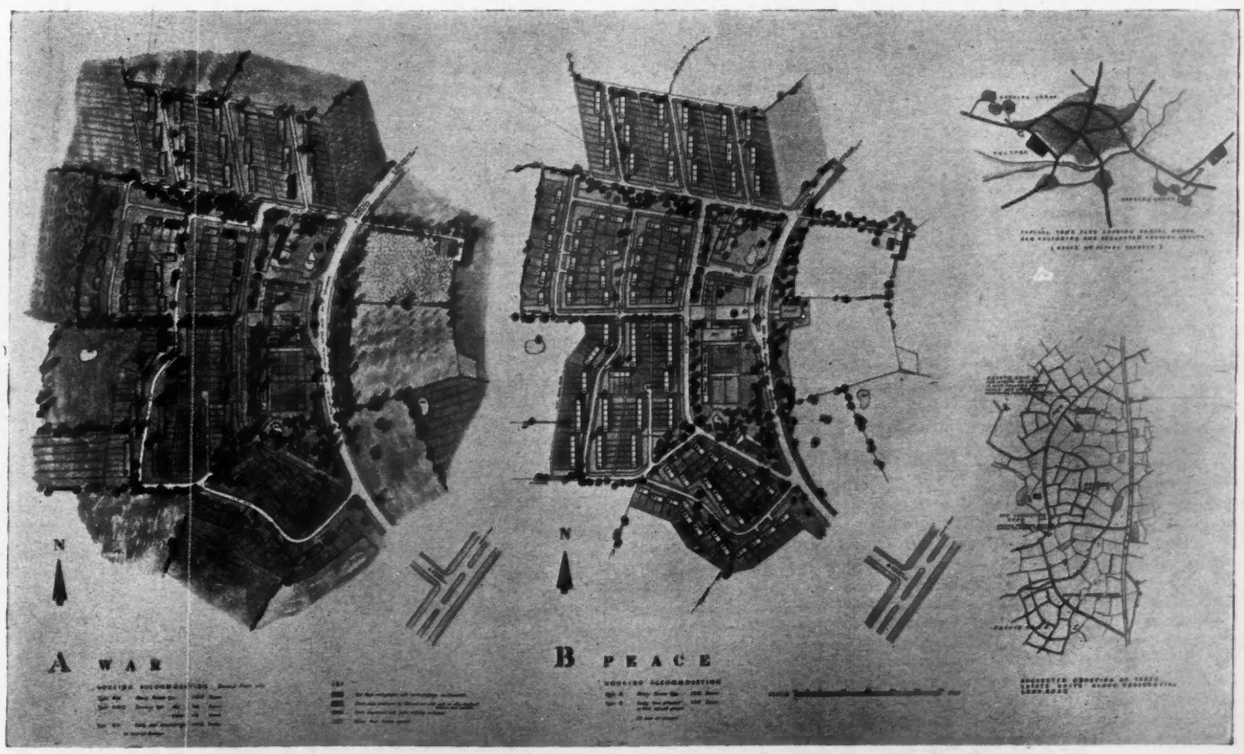
The Awards.

107. First Prize £250 [MISS J. G. LEDEBOER and GEORGE FAIRWEATHER].—This is simple and shows clear thought. A semi-detached plan whose war-time use is flexible, economic, and has been considered in detail, structurally and otherwise. The post-war plan is sound but has not been given such careful thought. The elevations are wholly negative. Such a scheme could be universally adopted in principle and be subject to varied architectural expression.

The sleeping-room is protected against blast and splinters. The entrance to this room is well screened by the external walls, except for the chance of splinters entering the lounge window. This gives a narrow vulnerable area in the sleeping-room, governed by the window sill and above sleeper height. Ventilation of the sleeping-room is provided by an ingenious form of light trap. A feature of the construction is the anchorage of the roof slab into the walls, which provides reinforcement to the structure as a whole against blast.

40. (£125) [R. A. HORSMAN].—Also a simple proposal. A standard semi-detached house plan with living-room only protected and converted to bedroom. This could be used as a self-contained family flat exclusive of reliance upon a communal restaurant. The architectural expression is very good and individualistic.

It provides blast and splinter protection to the sleeping-room, and the additional protection of the entrance to this by a transverse screening from adjacent houses has been well worked out. A slight disadvantage is that a change in disposition of houses on the site would involve reconsideration of this protection. No provision has been put forward for ventilation of the sleeping-room or escape, but neither would present an insuperable difficulty.



R.I.B.A. INDUSTRIAL HOUSING COMPETITION: DESIGN PLACED FIRST IN ESTATE SECTION.

BY MESSRS. G. GRENFELL BAINES, JOHN A. ASHWORTH, STANLEY E. CATTERALL & TOM MELLOR, AA.R.I.B.A.

112. (£25) [FREDERICK GIBBERD].—Final elevations may prove very distinguished. Plan somewhat oversize. Provides a system of ventilation by air inlets near floor level and extractor ventilators in the roof. War-time elevations would require further consideration.

52 (£25) [L. A. CLARKE, D. E. E. GIBSON, J. T. MALLORIE, P. J. MARSHALL, F. B. REYNER and L. WHITAKER].—Well balanced and good character. Lacks provision for ventilation to sleeping-room and the small opening light is a weakness.

24. (£25) [T. FORBES MACLENNAN and PARTNERS]. — Carefully considered and interesting. The sleeping-room lacks provision for ventilation, though small windows are provided. The protection provided by the 4½-in. internal partition to the sleeping-room is inadequate against blast coming through door and window openings to other rooms. The accompanying layout is original, but the houses are too closely associated.

74 (£10) [RODNEY THOMAS].—An interesting bungalow plan put to a dense use in war time. It is doubtful if the post-war estate plan could be spacious and economic. The elevations are cumbersome. Through ventilation is provided to the sleeping-room, but there is some uncertainty about the completeness of the blast and splinter protection.

79. (£10) [C. M. BOND, MRS. A. LEE and L. ENEVOLDSON].—A good example of careful protection of rooms on two floors. Ventilation has not been considered.

98. (£10) [B. H. DOWLAND].—Interesting plans, poor elevations. The roof soil is unpractical on a small scale. Puts forward a special asbestos-cement opening light which might very well work in practice.

105. (£10) [CYRIL SJÖSTROM].—Charming architectural expression. Is of special interest in that the post-war addition to the building is designed in terms of light-framed construction which may prove a logical development. The protection to sleepers is incomplete.

111. (£10) [R. G. BROCKLEHURST].—Is an original solution with a strong and commodious shelter for the occupants of a pair of houses, temporarily converted into four flats.

139. (£10) [A. LLEWELLYN SMITH, A. B. WATERS and L. C. MOULIN].—Combined use for a block of four houses. Has small high windows at the back of the sleeping-room and screen walls protecting some windows in front. The screen walls would afford incomplete protection as shown, and the competitor appears to have made an error in screening the sitting-room rather than the dormitory.

151. (£10) [A. W. SODEN and P. CORNU].—Interesting plans and elevations. Puts forward a proposal for concrete sliding shutters to windows of the sleeping-rooms, but their protection is inadequate against splinters. Supplies of pumice, the material specified for the shutters, have been mainly drawn from Germany and Italy.

SPECIAL NOTES.—In No. 115 [JOHN E. STERRETT] the shelter is slightly sunk and the soil banked. This is thoughtful, but the expense of waterproofing, etc., would give a very limited practical application.

External baffle walls are costly and should be used to the minimum, if at all. In many schemes they have not given adequate lateral protection to openings.

Overhangs to roofs are vulnerable to uplift from blast.

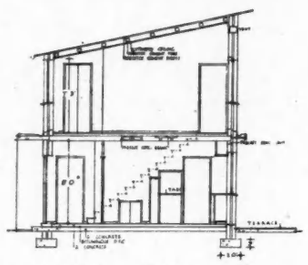
A number of competitors provide for blocking window openings up to the 6-ft. level, providing various forms of shallow fixed or opening lights above that level. Glass blocks, with or without concrete frames, are used in several schemes for fixed lights and toughened glass is suggested in a few cases for the opening lights. Many of these schemes fail on account of the lack of provision for ventilation under black-out conditions.

No. 54 [ARTHUR BROOKS] makes use of self-centering brick vaults, a development that may be of value in view of the need to economise in steel. The thrusts from the vaults, however, have not been well balanced by massing of masonry.

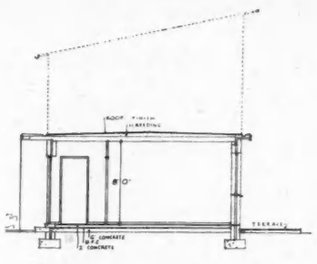
No. 41 [A. H. MOTTRAM and L. J. POND] shows an interesting system of fully recoverable shuttering for cellular concrete walling and a method of forming flooring with precast concrete filler units. The wall shuttering has been used with success in Scotland, and the flooring is of a type which has been widely exploited on the Continent and is very applicable to war-time conditions.

No. 15 (a) [J. J. SHANNON] gives a convenient method of building concrete walls in pre-cast concrete units as shuttering. This is a simple method and should be economical.

No. 98, one of the premiated designs, has an interesting hopper light window in asbestos cement with toughened glass.



CROSS SECTION
POST-WAR USE.



CROSS SECTION
WAR-TIME USE.

R.I.B.A. INDUSTRIAL HOUSING COMPETITION : DESIGN PLACED SECOND IN HOUSING SECTION.

BY MR. R. A. HORSMAN, A.R.I.B.A., A.M.T.P.I.

The Estate Plan.

Although many of the competitors followed too literally the observations in the conditions, the plans are for the most part varied and interesting. Landscape in relation to an open disposition of buildings, and planting integral with the houses themselves, have been more than usually well studied.

Many otherwise admirable plans fail because they are too conspicuous from the air, and would probably draw attention to an adjoining factory. The first prize is given to a well-planned scheme that would pass into the landscape by reason of the broken grouping of its buildings, and is, in addition, temporarily camouflaged.

We feel that possibilities arise from the war plan of 133, which receives a special award. This follows the traditional disposition of an English village, the cost of services to outlying houses being set against access paths instead of roads. As a war measure this inconvenience is permissible. Such a community could partly revert to rural industries and agriculture should there be partial industrial unemployment after the war. It obtains its rural character not through a false sentiment but through what may be described as an ordnance map inconspicuity and may contain as much considered planning as a more formal scheme. It achieves a large measure of concealment without resort to camouflage.

This total A.R.P. plan appears better than the individual treatment of houses. No. 16 House shows nets at so steep an angle that the shadow projection would be unchanged. No. 15 provides curved eaves, which would be ineffectual and vulnerable to blast. Roof treatment with grass or other natural materials is unpractical on a small scale owing to drying up of soil.

The Awards.

135. First Prize £100 [G. G. BAINS. J. A. ASHWORTH, S. E. CATTERALL and TOM MELLOR].—Excellently planned community, both as to imposed war-time camouflage and peace-time requirements. The principle is capable of adaptation to different sites. It creates its own character and clearly aims for a cultured living for an industrial population. It is no criticism to say that were it to revert to rural development it might quickly become shabby. The well-arranged blocks, open spaces, trees, etc., must be kept in good repair.

133 (£50) [HALLIDAY and AGATE].—An ingenious and practical war plan. The site has been artificially planned to create an illusion from the air, but not necessarily from the ground. Essentially ungeometric.

44 (£20) [EWART B. REDFERN].—A design of peculiar charm, economy and good sense. The accompanying house plans are in keeping. The lines of shadows would make it somewhat conspicuous from above. Aspect good.

26 (£10) [MISS STELLA SCOTT].—A larger-scale pattern that might prove satisfactory in certain districts. Good estate plan, but individual plots require careful study.

79 (£10) [C. M. BOND, MRS. A. LEE and L. ENEVOLDSON].—The houses follow existing hedges in broken lines.

108 (£10) [FARQUHARSON and MCMORRAN].—A delightful geometrical scheme, with house spacing similar to No. 26. This pattern requires wider spacing between the individual houses to obtain a rural character. Aspect good.

Joint Awards.

In addition, three awards have been made for complete sets of drawings.

13 (£10) [FRANK T. WINTER].—A well-balanced, sober scheme, with too pronounced a layout.

51 (£10) [EDWARD BANKS].—A sensitive and gracious design, also with too distinguished a layout. The A.R.P. Shelter is separate from the sleeping accommodation.

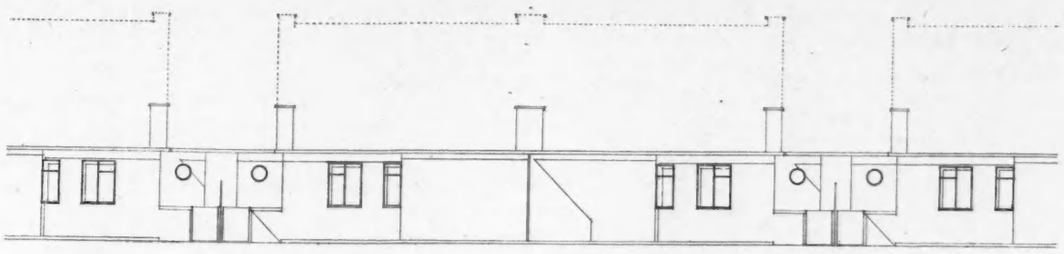
88 (£10) [H. F. HOAR and W. R. PERTWEE].—Has an abundance of original and interesting ideas which are open to criticism in various respects. Walls consist of two skins of 4½-in. brickwork filled with rammed earth or, alternatively, with concrete. New 4½-in. brickwork could probably not withstand the high pressure likely to be set up by earth ramming, and the saving of the moderate amount of bricks is hardly sufficient to warrant the complication of introducing another trade to do the concreting. Among proposals for camouflage of the estate, the omission of estate roads in war time is useful also for blast. The general layout is rational, but the planting is possibly over-studied.

Obituary: E. S. Gray, L.R.I.B.A.

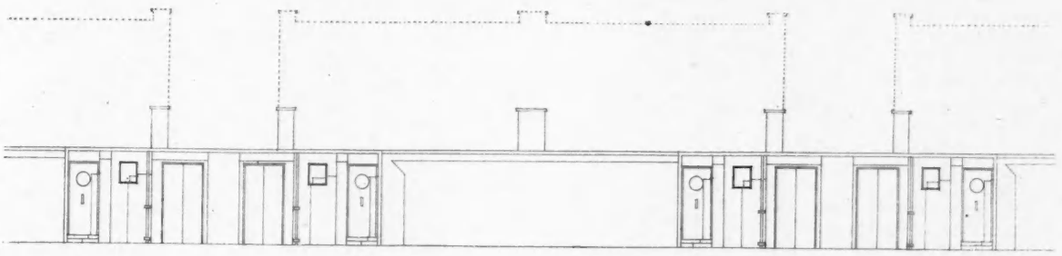
The death has taken place in Liverpool, on September 3, of Mr. Edwin Sheridan Gray, L.R.I.B.A., a pioneer designer of cinemas at home and on the Continent. Mr. Gray had designed many of the Liverpool cinemas, including the Rialto, the first super cinema in Liverpool. He was first architect to the Gaumont British and other circuits. He was responsible for several of the biggest cinema theatres on the Continent, including the Alhambra in Paris. Mr. Gray was a native of Liverpool and had been president of the Junior Reform Club and the Artists' Club. He joined the R.I.B.A. in 1931.

The St. Paul's Watch.

In connection with the photograph of the St. Paul's Watch, which we published in our issue for August 30, we regret that we inadvertently omitted after the name of Mr. D. M. Micklethwaite the distinctions of B.A.(Oxon), A.R.I.B.A.



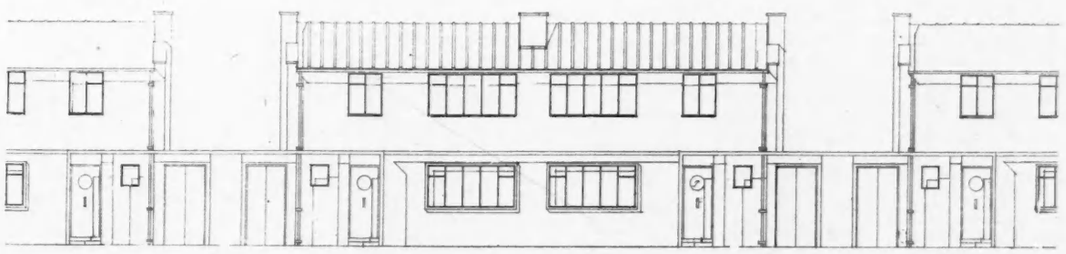
ELEVATION TO GARDEN



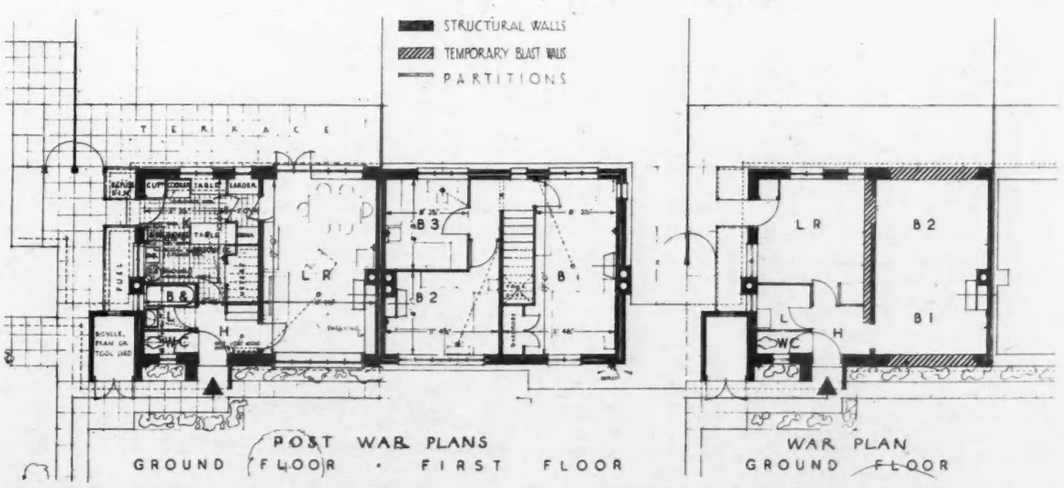
ELEVATION TO ROAD

Above : WAR-TIME ELEVATIONS. *Below* : POST-WAR ELEVATIONS.

ELEVATION TO GARDEN



ELEVATION TO ROAD



POST WAR PLANS
GROUND FLOOR · FIRST FLOOR

WAR PLAN
GROUND FLOOR

R.I.B.A. INDUSTRIAL HOUSING COMPETITION: DESIGN PLACED SECOND IN HOUSING SECTION.

BY MR. R. A. HORSMAN, A.R.I.B.A., A.M.T.P.I.

WAR-TIME BUILDING

BULLETIN NO. 8.

WAR-TIME Building Bulletin No. 8, just issued by the Building Research Station of the Department of Scientific and Industrial Research (H.M. Stationery Office, price 1s.) is in three parts. Part I deals with walls and piers for the factory types described in War-time Building Bulletins Nos. 1, 4 and 5. The walls are designed to give the code standard of protection against bomb splinters, and to utilise the thickness necessary for this purpose in carrying the load of the adjacent roof and in resisting the entire wind forces imposed on the walls. It is thus possible to dispense with steel in the outer walls while enabling them to resist forces which, if passed on to the roof members in the ordinary way, would have made necessary an overall increase in the weight of steel in the roof structure.

Three-column designs are given; the first consists of a shell constructed in brickwork on the flat, which can be filled with a brick or concrete core; the second is a similar design with the shell constructed in brick on edge, and the last, a precast concrete shell as a permanent shuttering for a concrete core. In almost all the types some reinforcing steel has been necessary, but the amount is considerably below that required for steel stanchions. The piers are, of course, slightly more bulky than the steel stanchions. Working drawings of the wall and column designs are available on application to the Building Research Station, price 2s. 6d. per type, post free.

Part II of the Bulletin describes, as an alternative to the structural steel designs

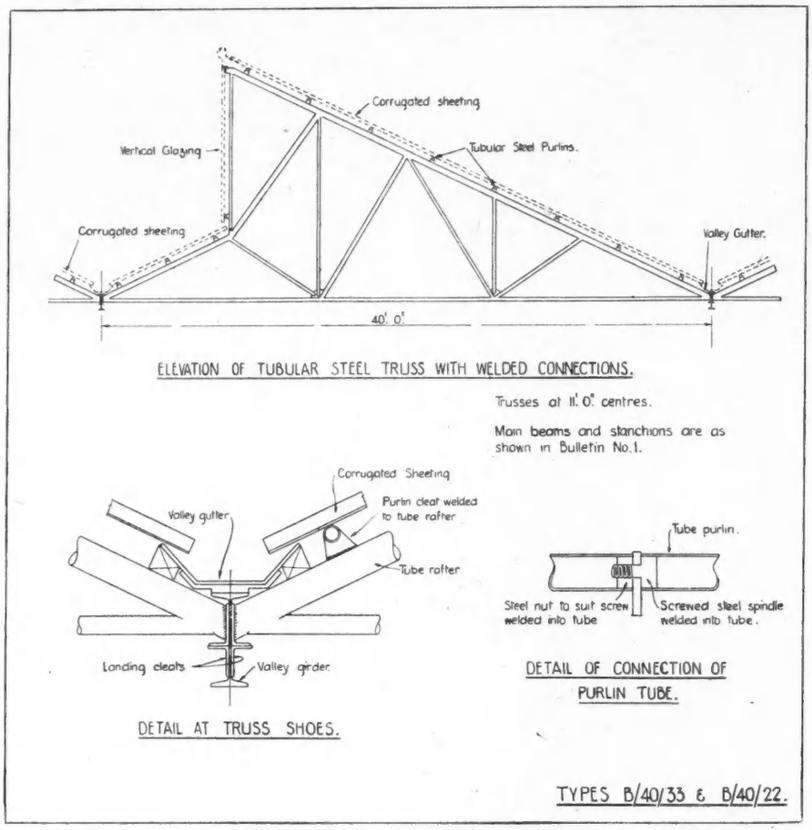


FIG. 7. (FROM EULLETIN No. 8). TUBULAR STEEL TRUSSES AND PURLINS FOR FACTORY BUILDINGS.

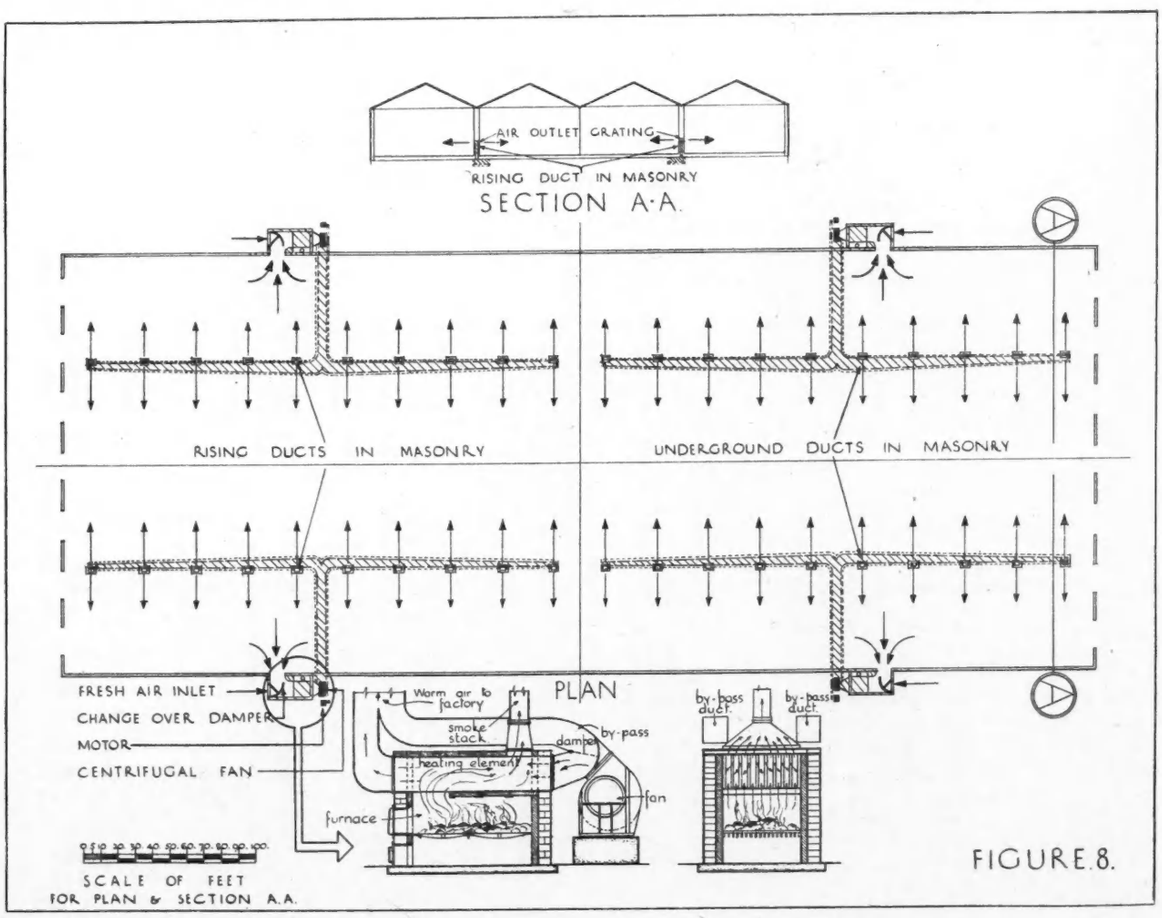


FIG. 8 (FROM BULLETIN No. 8). A HEATING AND VENTILATION SYSTEM FOR WAR-TIME FACTORIES.

previously issued, a design using welded tubular steel trusses and purlins. This has been prepared by Messrs. Tubewrights, Ltd., and shows a distinctly useful economy in weight of steel. The design is reproduced on page 266.

In Part III of the Bulletin is discussed a design which has been submitted by Mr. J. W. Cooling, M.Sc., M.I.H.V.E., and examined for the Station by a panel of experts, for a heating and ventilation system for war-time factories built to the designs outlined in previous bulletins. The necessity to avoid loads suspended from the roofs, the advantages in respect of resistance to air attack of decentralised heating units, the desirability of adequate ventilation in the black-out, and the ever-present need to conserve metal, have all been factors qualifying the design. Warm air is forced through underground ducts by means of fans, to be distributed throughout the body of the factory through rising ducts at each stanchion. The air is heated by direct-fired air-heaters located at suitable points around the factory. Details are given in the Bulletin for the construction of the ducts, and for the design of the essentials of the system, although variations can, of course, be devised to suit particular cases. On a typical factory design, it appears that the economy in steel should approximate to 40 or 50 per cent. (Design on p. 266.)

THE PROTECTION OF GLASS IN HOSPITALS

THE following Bulletin, No. E.4, has recently been issued by the Ministry of Home Security (Research and Experiments Branch) :—

Introduction.

Recent air raids on this country have shown the importance of preventing broken glass from being scattered by the blast of high-explosive bombs. Numbers of casualties have been caused by flying or falling glass. Preventive measures are essential in rooms, such as wards and operation suites of hospitals, occupied during raids.

The protection of hospital windows is not a simple problem. Horizontal or sloping glass in skylights and roofs and large sheets of plate glass need different treatment from glass in windows of ordinary size. It requires study and detailed application to overhaul existing protection in the light of recent knowledge. A protective scheme may involve also some staff organisation for quick shifting of beds, placing of window screens, opening of doors, etc.

Existing Information.

Protective methods have been fully described in A.R.P. Memorandum No. 12, "The Protection of Windows in Commercial and Industrial Buildings," and in the more recent pamphlet, "Your Home as an Air Raid Shelter." These two publications should be studied in conjunction with this bulletin.

General Notes.

The breakage of glass by blast cannot be prevented except by removal or possibly by closing up the window opening completely with brickwork or with a substantial barricade as described in the Appendix to A.R.P. Memorandum No. 12. The primary object of such closure would be protection from bomb splinters which are much more lethal than broken glass; the protection to glass is only incidental and is effective only when the closure is complete.*

Secondly, nothing stuck on glass will make any material difference in the amount of glass broken by blast; nor can any simple bracing system, so far examined, be relied on to help matters. There is no question of an adhesive treatment "saving" the glass.

The aims must be to prevent or at least reduce casualties from violent scattering of broken glass and to keep the room habitable after the glass is broken. This latter is mainly a matter of protection from the weather.

A single explosion can damage panes of glass, even on the far side of the building, in a light well, on a roof or inside the building. It is impossible to forecast whether glass will fall inwards or outwards. Glass in interior partitions, screens and fanlights can be as dangerous as that in external windows. Large panes of glass in doors are equally dangerous. If such glass does not serve as weather protection replace it, where necessary, by a material either opaque or translucent as required.

Glass in windows and doors is less liable to fracture by blast when they are open than when closed. They should be as wide open as possible, but mere opening does not eliminate the need for protection.

Materials, etc.

The great national demand for materials may make it necessary to treat windows in order of importance. Rooms which will be unoccupied during air raids should come last. Thorough precautions in rooms, such as wards occupied by severe cases, operation and similar suites, and kitchens and stores containing exposed food, are preferable to hasty and possibly inadequate protection of all the glass in a hospital.

Use as wide a range of protective methods as possible. Not all the recommended materials are now readily available.

Protection of Vertical Windows.

Plain glass can be replaced by wired glass or substitutes for glass, but short of removing the glass there are three ways in which the scattering of broken glass can be reduced :—

(1) *Covering windows with wire-netting of ½-in. or smaller mesh.*

To allow cleaning and adjustment of windows, or to enable window fastenings to be reached, the wire-netting is best fixed to detachable frames. This form of protection is specially suitable for large windows. Moreover, wire-netting would make a good base for temporary weather protection if the glass should be destroyed.

(2) *Covering windows with internal light-weight screens, fitted close to the glass, described and illustrated in A.R.P. Memorandum No. 12 and in "Your Home as an Air Raid Shelter."*

Such screens, although they may be displaced by blast, usually cause the broken glass to fall close to the window. Screens should be suspended both for ease of replacement and even to prevent them becoming missiles themselves. This recommendation does not apply to wire-netting in frames mentioned in (1) above. Protective screens of all types must be in place during raids.

(3) *Anti-scatter treatment.*

Panes of glass properly covered by adhesive "anti-scatter" treatments will remain in place under mild blast even if badly cracked; but under severe blast they may fall out bodily. It is better, but not essential, that adhesive treatments should extend beyond the glass over the window frames. Glass which is not exposed to the weather (e.g., in partitions) and which cannot be removed can with advantage be given anti-scatter treatment on both sides. Adhesive treatments fall into four types, which have been arranged in approximate order of decreasing strength. All the anti-scatter treatments are applicable to smooth glass. Glass with a rough surface or leaded lights can best be protected by screens or wire mesh. Thick curtains and blinds help to prevent glass flying under mild blast, but are definitely not an alternative to protective treatment.

(i) *Textile materials.*

Strong textile nettings or other fabrics if firmly stuck to the glass afford good "anti-scatter" protection. Some nettings are obtainable ready coated with adhesive and only require to be damped. The fabric should extend over the glazing bars and be stuck to them as well as to the glass.

Any fabric stuck with a water adhesive must not be washed (e.g., gum, glue, paste) and even tends to come unstuck if the window gets damp. This can be improved (a) by varnishing over the edges, or better over the whole of the fabric when it is thoroughly dry; (b) by securing the edges with adhesive tape.

Instead of a water adhesive, a preparation insoluble in water may be used, such as dope, varnish or lacquer. This is brushed or sprayed on the glass and the fabric is pressed into place while the surface is still tacky. After the net has been attached to the glass a coat of the material used for attaching it can be applied over the net. The net, when properly dry and set, can be wiped down with a damp cloth if it should get dirty in use.

If paper is used, it should be thick and tough. Thin papers applied in criss-cross strips are not recommended. Papers reinforced with a mesh of cotton, linen, hemp, sisal or other fibre are to be preferred. Flour paste goes sour after a day or two and should be freshly prepared for use. The addition of a preservative is not worth while.

Where permanent obscuration does not matter, an all-over covering of cardboard, millboard or American cloth may be used. Adhesives should be stronger than those used for paper; suitable adhesives are flexible glues for either hot or cold application; paperhangers' paste or "cold water paste." The last two should be made rather stronger than usual and it may be necessary to wet the cardboard before applying the adhesive to it.

(ii) *Transparent films.*

Cellulose film, whether plain or self-adhesive, is affected by moisture, which causes wrinkling. A coat of good pale varnish or lacquer applied as a waterproofing over the film helps considerably to prevent them from absorbing moisture from the air. This is an important precaution in all rooms where the air is likely to be charged with moisture (e.g., operating theatres and sterilising rooms). Self-adhesive film has the advantage that it needs only to be pressed on the glass (preferably with a roller) and gives a better finished appearance than plain film applied with a separate adhesive. With cellulose acetate film, gum and other water adhesives are unsuitable. The manufacturers of the film should be consulted on the special adhesive required. There are also various self-adhesive cellulose acetate films. A hand roller for applying self-adhesive tape has been developed by the Building Research Station, Garston, near Watford, Herts, from whom particulars are obtainable.

(iii) *Strip treatments.*

Although a greater degree of protection is obtainable by applying one of the tested treatments all over the glass, strips of material spaced apart can nevertheless be used with good effect, but the closer the spacing the better. The strips should preferably be not less than 1½ in. wide and should be spaced with not more than 6 in. of clear glass between them. Narrower strips should be spaced correspondingly closer together.

(iv) *Liquid coatings.*

A liquid coating is not expected to give effective anti-scatter protection on panes more than 4 sq. ft. in area. The glass must be perfectly dry before application and should not be hot from the sun. A 3-in. soft bristle brush should be used, brushing downwards only and allowing the coating to flow freely. The first coat should be allowed to set before applying a second coat. The coating should extend on both sides of the glazing bars.

* A decontamination centre in a substantial building was recently affected by a 500-lb. bomb bursting at a distance of 70 ft. All the windows, which were large, had been heavily sandbagged, externally, but a gap had been left a few inches from the top. Most of the glass in the windows, including some from panes 6 ft. below the top of the sandbagging, was scattered violently over all the interiors. Had the centre been in use, particularly by unclothed persons, heavy casualties must have been caused by glass.

This class includes rubber latex, compositions containing rubber latex, with or without a sealing coat and synthetic resins. A note of caution is sounded here. Many proprietary materials of this class have been advertised with extravagant claims. Hospitals are warned against accepting the unauthenticated claims of advertisers.

These materials are apparently easy to apply, but in practice it is not easy to get a coat of satisfactory thickness. They are liable to lose their protective value when exposed to light, particularly sunlight, and it is not always possible to detect by mere inspection that their virtue has departed. This applies with special force to rubber latex preparations.

Some of these preparations are unreliable from the start, some are useless in 10 days, and few have survived three months' exposure. The prospect of detecting decay, removing perished coats and periodical renewal is not encouraging.

Intending purchasers of such preparations should ask to see a final report from the Building Research Station, and if it is not forthcoming or indicates defects, they would be well advised to reject the material. It is also possible that the material offered may not have the same constitution as that tested; purchasers should, therefore, ask for a written guarantee from the makers that the material offered is identical with that tested by the Building Research Station.

Roof Glazing.

During an air raid persons in rooms with roof glazing run risk from incendiary bombs, anti-aircraft fragments and machine-gun bullets. Roof glazing that is "shadowed" from the direct blast of bombs by parapets, higher buildings, or by the angle of the roof slope, is somewhat less likely to be damaged than glazing directly exposed to blast. Severe blast may cause wired glass, when fractured, to fall bodily from roof lights. In protecting roof glass, give special attention to retaining weather-proofness after fracture, and to precautions against injury to equipment by falling glass. Temporary weather protection is given by covering the glazing externally with a suitable hessian-bitumen treatment, for which a British Standard (A.R.P.) Specification is under preparation. Incidentally, this treatment provides an efficient means of obscuration.

The addition of supports underneath, across the glass at about 2-ft. centres, will help to keep the fractured glass in place, particularly wired glass. Wooden battens about 1 in. by ½ in. securely fixed to the glazing bars will serve; they should touch the glass. The supported glass, together with the external hessian-bitumen treatment, is likely to keep the surface weather resisting (and obscured) for some weeks.

Similar support can be given by wire-netting, which should be close up to the glass. Netting is most desirable under plain (not wired) glass. Without support by battens or netting, dangerous fragments of glass may fall at odd intervals, long after fracture. If the netting is of ½-in. mesh, none but very small fragments will fall. To prevent all glass from falling some strong sheeting material must be securely suspended under the whole glazed area.

In many hospitals there are small lantern lights in the concrete roofs of corridors, etc. While the concrete will normally resist anti-aircraft fragments and the 1-kilo incendiary bomb, if complete overhead protection is required, it will be necessary to dispense with the lantern light and to cover the opening with a 4-in. reinforced concrete slab or with two layers of sandbagging on stout boarding with bituminous sheeting as weather protection.

Light Fittings.

Electric fittings, in particular electric lamps and radio valves, are less liable to damage by blast than is generally supposed. Suspended light fittings behave well, but are vulnerable to flying glass splinters and to bomb fragments.

Occupied Rooms Generally.

In rooms which must be occupied during air raids, the following should be considered :—

(a) *Wards.*—All glass panes should be treated to prevent flying. Where beds are beneath windows, they should be drawn towards the middle of the ward to reduce the risk to patients from treated panes of glass blown bodily from the windows. Patients should be instructed to cover their heads with the bedclothes as a protection against falling plaster and any fragments or dislodged panes which may fly some distance inward.

(b) *Operation Suites.*—It cannot be expected that operation suites with large areas of glass will remain usuable under conditions of air attack. Not only are the windows liable to fracture, but also glass screens and glass-fronted cupboards. Safety lies in complete removal of all glass except that in utensils and suspended light fittings. Window openings should be completely bricked up or wholly barricaded, and any roof-light openings should be covered by concrete slabs or sandbags on timber. If the operation light is a single freely suspended unit (such as the Zeiss type) fracture of the glass is not likely, especially if the window openings are wholly blocked or barricaded.

Apart from danger to the occupants of operation suites, severe damage to glass may keep the suite out of use at a time when it is most needed. It is wiser to take precautions beforehand.

(c) *Kitchens.*—Kitchens are not likely to be occupied during air raids, but if glass in kitchens is not protected there is serious danger of exposed food receiving particles of broken or powdered glass. Exposed food should be kept in refrigerators, containers or store-rooms without windows. Protective devices can do no more than prevent the flying or falling of the larger glass fragments. Receptacles, such as saucepans and basins, should be stored upside down when not in use to avoid the risk of small glass fragments entering them and remaining unnoticed. Lids of all receptacles should be closed before the kitchen is vacated.

Glass Substitutes and Repair of Damaged Glazing.

The dangers of flying glass are eliminated by its removal and the substitution of alternative, non-splinterable materials. Having studied this bulletin, inspect the glass throughout the hospital. Label, remove, crate and store every pane of glass that can be dispensed with. Where necessary, replace by transparent, translucent or opaque material, according to the circumstances. Such materials will also be required for temporary or even permanent repair. Suitable materials, both translucent and opaque, are listed in A.R.P. Memorandum No. 12.

Translucent materials possessing a light transmission approaching that of glass are at present difficult to obtain owing to the demands of aircraft production. Flexible cellulose acetate materials, reinforced with metal or fabric mesh, are, however, obtainable. These are reasonably translucent, but are not transparent. Alternatively oiled or waxed fabrics may be used.

Suitable opaque materials, apart from boarding which is difficult to obtain, are bituminous sheeting, felts, asbestos-cement sheet and plaster boards. The last, if well coated with paint externally and at the edges, is likely to give reasonably permanent weather protection on vertical glazing. Bituminous sheeting is the most suitable material for covering the openings of damaged roof glazing.

It is desirable to make arrangements beforehand for both temporary and permanent repair to glazed openings.

A number of anti-scatter treatments have been tested at the Building Research Station and found to afford a useful measure of protection against flying glass. Details of such treatments can be obtained on application to the Director, Building Research Station, Garston, Watford.

SCHOOL NEWS

THE NORTHERN POLYTECHNIC SCHOOL OF ARCHITECTURE.

R.I.B.A. recognition was first granted to this School in 1925, when the Diploma of the Three Years' Day Course was accepted as a qualification for exemption from the Intermediate Examination.

Similar recognition was also granted to the Five Years' Evening Course in Architecture in 1933, which encouraged evening students to submit to a comprehensive training instead of "cramming" for examination subjects in the shortest possible time.

The Day School has now been granted full recognition, and students who complete satisfactorily the Five Years' Course will be exempted from the Final Examination for Associateship, R.I.B.A.

The School of Architecture is a section of the Department of Architecture, Surveying and Building, which also provides day and evening training for those engaged in all branches of the building industry and the allied professions.

The Department possesses excellent workshops for the teaching of craft processes, and students of architecture are therefore afforded opportunities of studying the many craft processes and materials they will in due course supervise and employ.

Successes achieved by past students of the School include the Rome Prize, Bossom Gold Medal, and other R.I.B.A. Awards, and premiums in important public competitions.

Since the outbreak of the war, and with the approval of the R.I.B.A., certain temporary modifications have been made in the curriculum so that, without any lowering of standard, students who enter the School before reaching the age of 17 are enabled, subject to satisfactory progress, to obtain the necessary qualifications for Associateship before becoming liable for military service.

No important changes have been made in the staffing arrangements. Air raid shelters have been erected on the Polytechnic premises, and it is proposed to continue the School activities for as long as circumstances permit.

Applications for admission should be addressed to the Head of the Department of Architecture, Surveying and Building, Mr. T. E. Scott, F.R.I.B.A., Hon. F.I.B.D. Mr. Scott was Athens Bursar (1936).

L.C.C. HAMMERSMITH SCHOOL OF BUILDING AND ARTS AND CRAFTS.

Classes in the Evening School and in the Senior Day School will be resumed on Monday. There is a full course leading to Intermediate and Final Examinations of the R.I.B.A., for which a number of students are prepared every year.

In addition to the instruction given for architectural students, the Building Department provides training in all the building crafts, leading to the examinations of the City and Guilds of London Institute, and the School is recognised by the Board of Education for the Ordinary and Higher National Certificates.

Classes are held for those studying for the professional examinations of the R.I.B.A., the Chartered Surveyors' Institution, the Institution of Structural Engineers, the Auctioneers' and Estate Agents 'Institute, and the Institute of Builders.

All classes begin at 6.30 p.m.

Full particulars regarding the classes to be held next session may be obtained on application to the Principal, Mr. H. W. Mole, F.R.I.B.A., M.I.Struct.E., at the School. Intending students should attend at the School for enrolment during the week beginning Monday, September 2.

The Art Department provides instruction in drawing and painting from life, antique and general drawing, etching and engraving. Amongst the craft subjects taught are bookbinding, lettering and illuminating, fabric design, modelling, and carving in wood and stone.

A.R.P. SCHEMES

LONDON.

BARNET. — Emergency Committee of U.D.C. reported lowest tender for provision of communal shelters in Barnet streets—that of Walker (Tooting), Ltd., for £11,295—been recommended for acceptance by Middlesex C.C. The shelters will provide accommodation for 6,144 people.

CHIGWELL.—U.D.C. accepted tender of Stedman Bros., Barkingside, Ilford, for 150 brick surface-type householders' shelters. Plans by G. Holbourn, A.M.Inst.C.E., E. and S.

LEYTON.—T.C. received M.H. approval to £430 and £500 respectively for replacement of sandbagging by concrete blast walls at first-aid posts and public baths.—B.E. and S. reported that in connection with proposal for joint decontamination laundry with Walthamstow T.C., scheme now been prepared for submission to Essex C.C. Approximate cost, £1,400.

PENGE.—Council placed contract for waterproofing shelters with B. R. Palmer and Co., of Merton.—Council received sanction of M.H. to raising of loan for £3,500 in respect of public shelters and £730 for cleansing stations.

WESTMINSTER.—City Council approved: Additional protective works at Kingston House Casualty Depot, at £740; adaptation works at public shelters in 14 requisitioned premises, at £3,172 10s. 6d.; protective and adaptation works, etc., at wardens' post at Norfolk-st., W.C.2, at £150; constructional works at five shelters, at £614 4s.; constructional works in connection with shelters at five residential institutions, at £689 5s.; various adaptation works at temporary mortuary, Westminster Training College, at £140.

WOOD GREEN.—T.C. accepted tender of C. J. Pilgrim and Sons, at £350, for a control room and shelters. Contract placed with C. J. Pilgrim and Sons for shelter at Wood Green and Southgate Hospital, and for waterproofing of further 500 shelters.

PROVINCIAL.

ASHINGTON.—J. T. Fletcher, Woodhorn-rd., Ashington, contractor for 100-155 domestic shelters for U.D.C. Plans by B. Preston, S.

BATH.—E.C. recommend £5,000 on school protection work.

BELPER.—U.D.C. propose shelters for all Council schools and for A.F.S. at two depots.

BLACKBURN. — Emergency Committee approved site at Blakey Moor school yard for shelter, basement passages at Sessions House, 285 individual shelters and 133 communal shelters in Saunders-rd. and Montague-st. districts. Plans by W. Pickstone, B.E.

BLYTH.—W. M. Wilson and Co., Ltd., Cambois, Blyth, and George Potts, 122, Waterloo-rd., Blyth, contractors for 77 domestic surface shelters in Ridley and Bebside wards for T.C. Plans by T. Wilson, B.E.

BOLDON.—U.D.C. to build number of shelters for families and also to concrete about 1,000 Anderson shelters.

BRANDON.—F. Hedley, Architect to U.D.C., to prepare plans for domestic shelters.

BRIDLINGTON.—T.C. accepted tender of Jaques and Greaves, Ltd., of Doncaster, for 12 public shelters, at £2,112.

CHEADLE.—R.D.C. propose shelters at Kingsley, Ipstones and Tean schools.

CROMFORD.—Managers of C. of E. schools to erect shelters.

DARLINGTON.—W. Lyall, 19, Victoria-rd., architect for shelters at Skerne works.

DERBYSHIRE.—E.C. received sanction for A.R.P. work in certain schools.—Plans by J. Harrison (A.), County Architect, St. Mary's-gate, Derby.

DURHAM.—Sanction received by R.D.C. to build domestic shelters at four colliery districts. Plans by J. N. Adams, S.

EAST RETFORD.—T.C. to erect 136 public shelters for 6,547 persons, at £15,000. Plans by R. E. Wilson, B.S.

ELLESMERE PORT.—U.D.C. to erect additional 48 domestic and 23 communal shelters. Plans by C. W. Davies, S.

GREAT HARWOOD.—U.D.C. to prepare scheme for shelters on approved sites.

GUILDFORD. — T.C. to purchase 500 shelters, at £9 10s. each, from Burbridge Builders, Ltd.

HOUGHTON-LE-SPRING. — U.D.C. approved plans by V. J. Hunter, S., for 168 domestic shelters, at £3,031.

JARROW.—T.C. received sanction to build an auxiliary fire station. Plans by J. Scott Weir, B.E.

KESWICK.—U.D.C. to erect 38 communal shelters at Headlands, Manor Brow, High Hill, Heals-la. and Mount, Windebrow-ave., Woolpark-yard, at £4,500.

KETTERING.—T.C. to erect 170 additional shelters of 24, 36 and 48 units.

KIDSGROVE.—U.D.C. placed contract with W. E. Jones, Lewin-st., Middlewich, at £788 10s., for five communal shelters. Plans by H. W. Crowther-Green, E. and S.

LEEK.—R.D.C. to erect public shelters at Baddeley Green and Cross Roads, Moss Hill, Endon, Fountain, Roebuck and Brown Edge.

LEIGH.—E.C. received sanction to borrow £4,122 for shelters and reinforced concrete work for A.R.P. in elementary schools. Plans by T. A. Clare, B.S.

LITTLEBOROUGH. — J. Berry, Ltd., Chapel-st., Heywood, awarded contract for 9 semi-sunk type shelters for the U.D.C. Plans by G. F. Wild, S.

MAGHULL.—Lancashire C.C. to erect shelters in area. Plans by S. Wilkinson (F.), County Architect, Preston.

MIDDLESBROUGH. — T.C. to build public shelters at Carter Park, Art Gallery site, and Glebe recreation ground. Plans by C. Gorman, B.E.

MIDDLEWICH.—U.D.C. to erect 24 public shelters.

NEWCASTLE-ON-TYNE. — City Council received sanction to borrow £300 for shelter at Municipal College of Commerce.—H. Kindred, 145, West-rd., Newcastle-on-Tyne, contractor for public shelter at Gaiety Theatre.—City Council accepted following: Shelters at five maternity and child welfare centres, A. Anderson (Contractors), Ltd., 1, Stanmore-rd., Newcastle-on-Tyne, £1,750; 60 shelters each: R. M. Chamberlain and Co., Team Valley estate, Gateshead; T. E. Hill, Lyndhurst-ave., Newcastle; and H. Storey, Cleveland-gdns., Newcastle.

NORTH RIDING.—C.C. to provide shelters at six further schools, at £5,680.

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NORTHUMBERLAND.—C.C. to construct shelters at schools at Corbridge-on-Tyne, Ashington and Newburn. Architect, W. W. Tasker, County Council offices, Mitford-rd., Morpeth.

OXFORD.—City Council approved recommendation of City Finance Committee to apply to M.H. for sanction to £5,600 for shelters, wardens' posts, first-aid posts and cleansing centres.

PRESTON.—T.C. propose domestic and communal shelters for 5,544 persons in Fishergate, Church-st., Manchester-rd., and Ribble areas, at £14,226.

PRUDHOE.—U.D.C. to press Northumberland C.C. to provide communal shelters for whole area.

ROCHDALE.—J. Hobson and Sons, Ltd., Newark-st.-works, Nottingham, accepted by C.B. for alterations at skating rink, Spotland, and Meanwood school, in connection with A.R.P. Plans by S. H. Morgan, M.Inst.C.E., B.S.

SHEFFIELD.—Emergency Committee propose A.R.P. cleansing station.

SHIFNAL.—R.D.C. propose shelters at the Green, Albrighton.

SOUTH LONSDALE.—E.C. to erect shelters at elementary schools.

STANLEY (YORKS).—U.D.C. has approved 10 sites for public shelters, and 670 domestic shelters. Plans by A. W. Quibell, S.

STOCKTON-ON-TEES.—R.D.C. to build shelters at Carlton and Thorpe, and at Eaglescliffe. G. W. T. Brown, S.

SUNDERLAND.—T.C. received M.H. consent to borrow £54,071 for school shelters; £1,065 for shelter protection at junior instruction centre for Girls.—T.C. to build shelters at clinics at Hendon, Hylton-rd., and Southwick.—Council propose hundreds of domestic surface shelters. Plans by J. E. Lewis, B.E.

UPHOLLAND.—U.D.C. propose 13 public shelters for 300, at £614 10s. Plans by A. Hunt, S.

WHITEFIELD.—Committee of Unsworth Garden Village propose shelters at Hollins-la., Garden Village.

SCOTTISH.

STIRLING.—A. E. Scroggie, Brown-st., Falkirk, architect for Alexander, Ltd., for shelters.

OFFICIAL NOTIFICATIONS

Mining Timber: Transport Subsidy.

In order to encourage the production of home-grown mining timber in districts remote from collieries, the Timber Controller will pay a subsidy to persons who have paid the railway charges in respect of such timber on long railway hauls in the United Kingdom. The cost of sea transport on mining timber produced in Northern Ireland and Scotland will rank with rail transport costs for payment of the subsidy. For the time being the subsidy will not be payable on mining timber if delivered to mines in the counties of Monmouth, Glamorgan, Pembroke, Carmarthen or Brecon.

In the case of inland hauls the subsidy will consist of the amount by which the railway charge for carriage only exceeds 15s. per ton on home-grown mining timber consigned to collieries direct or via importers' and merchants' yards or colliery associations' yards. Details are available from the Timber Controller, Branch 8, Clifton Down Hotel, Bristol, to whom applications for the payment of subsidy should be made.

A Works Golf Competition.

Eight works teams competed at Stinchcombe Hill this year for the trophy presented by Mr. Percy Lister, chairman of Messrs. R. A. Lister and Co., Ltd., of Dursley (Glos.), to mark the jubilee of the Stinchcombe Hill Golf Club.

The trophy was won by Messrs. T. H. and J. Daniels' team, and the cup was accepted for it by Mr. J. Daniels. The Lister team finished third. The competition for the main Jubilee Cup, open to clubs of 50 years of age and over, has been postponed until after the war.

The Stinchcombe Hill course, famous for its view over 13 counties, is now equipped with numerous additional "hazards" to discourage uninvited guests from abroad, which add alike to its normal interest and difficulty.

CONTRACTS OPEN

For some contracts still open, but not included in this list, see previous issues. Those with an asterisk are advertised in this number. Certain conditions beyond those given in the following information are imposed in some cases, such as that advertisers do not bind themselves to accept the lowest or any tender, that a fair wages clause shall be observed, that no allowance will be made for tenders; and that deposits are returned on receipt of a bona-fide tender, unless stated to the contrary. The dates at the head of paragraphs are those for the submission of tenders; a dagger (†) denotes closing date for applications; the name and address at the end refer to the person from whom particulars may be obtained. Abbreviations: (A.) for A.R.I.B.A.; B. of E. for Board of Education; B.C. for Borough Council; B.E. for Borough Engineer; B.S. for Borough Surveyor; C. for Clerk; C.B. for County Borough; C.C. for County Council; C.E. for County Engineer; C.S. for County Surveyor; D.S. for District Surveyor; E. for Engineer; E.C. for Education Committee; (F.) for F.R.I.B.A.; (L.) for L.R.I.B.A.; M.W.B. for Metropolitan Water Board; M.H. for Ministry of Health; M.T. for Ministry of Transport; P.C. for Parish Council; R.D.C. for Rural District Council; S. for Surveyor; T.C. for Town Clerk and Town Council; and U.D.C. for Urban District Council.

BUILDING.

SEPTEMBER 14

Fife C.C.—Alterations and additions, new police station, Falkland. George Sandilands, County Master of Works, Wemyssfield, Kirkcaldy. Dep. £1 1s.

Walsingham R.D.C.—Communal domestic surface shelters for Fakenham and Melton Constable parishes. Building S. (Housing Dept.), The Square, Fakenham.

SEPTEMBER 16.

Arklow U.D.C.—124 houses, including roads, sewers and water mains. J. P. Caffrey, Town S. Dep. £5 5s.

Coventry T.C.—Extensions to Central Police Station, St. Mary-st. D. E. E. Gibson, City Architect, 1a, Warwick-row. Dep. £3 3s.

Durham C.C.—Adaptation and repair work in connection with Newton Cap and Needless Hall Farms, Toronto, near Bishop Auckland. Wm. Carter, A.R.I.B.A., School of Agriculture, Houghall, Durham.

Mansfield Woodhouse U.D.C. — Fire station, hose tower, and officers' houses, at Church-st. Lawrence Walker, S. Dep. £2 2s.

Mansfield Woodhouse U.D.C.—61 domestic surface communal shelters. Lawrence Walker, S.

Tunbridge Wells T.C.—Brick and re-inforced concrete underground water storage tank. H. P. Bishop B.S., Linden Park-rd. Deposit £2 2s.

SEPTEMBER 17.

Pudsey T.C.—Public shelters. B.S.

West Riding C.C.—Alterations to mortuary accommodation at Ripon Institution; bathing and lavatory accommodation at Selby Institution; extension to mortuary accommodation at Selby Institution, and replacement of eaves gutters at Keighley county hospital. Acting architect, County Hall. Wakefield.

SEPTEMBER 18.

Dublin T.C.—Sanitary accommodation at Fruit and Vegetable Market, East Arran-st. City Architect's Dept., 1-3, Parliament-st.

Liverpool T.C.—Additional accommodation to X-ray dept., Alder Hey Hospital. City Architect and Director of Housing, Blackburn-cham., Dale-st., Kingsway. Dep. £2 2s.

SEPTEMBER 19.

Woking U.D.C.—Surface type domestic air raid shelters. G. F. Hawkins, E. and S. Dep. £2 2s.

SEPTEMBER 20.

Clitheroe T.C.—26 shelters at elementary schools. B.S., Church-st. Dep. £2 2s.

SEPTEMBER 21.

Durham C.C.—House for police superintendent, at Houghton-le-Spring police station. W. J. Merrett, C.E., S. and Architect, County Surveyor's Office, 20, Old Elvet, Durham.

†Lincoln (Kesteven) C.C.—Police superintendent's house, Sleaford. C. B. Metcalfe, (F.), County Offices, Sleaford.

Stroud U.D.C. — Communal domestic shelters. F. Foster Langley, E. and S.

SEPTEMBER 23.

Bicester U.D.C.—Alteration of building for use as mortuary. S., Council Offices, The Causeway.

Hemel Hempstead E.C.—Surface shelters with brick walls and concrete roofs at 11 schools for 1,540 children. B.S., Market-sq. Dep. £1 1s.

NO DATE.

Brighouse T.C.—Public shelters. B.E. and S., Commercial-st.

Cheltenham T.C.—Shelters. G. Gould Marsland, B. and Water E.

PAINTING, ELECTRIC LIGHTING, HEATING, &c.

SEPTEMBER 14.

Ceiriog R.D.C.—External painting of 36 houses at Chirk, 12 at Glynceiriog, 4 at Dolywern, and 16 at Llanrhaiadr. R. W. Aubrey, S., Derwen, Dolywern, Wrexham. Dep. £1 1s.

Middlesbrough C.B. — Painting and plastering at Holgate Hospital. Preston Kitchen, T.C. Dep. £1 1s.

SEPTEMBER 16.

Aylesbury R.D.C.—External painting to 36 cottages and drainage works at housing estate, Cross Roads, Stone, and housing estate, Oakley. Raymond C. White (F.), Brooke House, Market-sq. Dep. £1 1s.

West Hartlepool C.B.—Painting Mozart-st. cottages; market shops, Lynn-st. (externally); municipal buildings (externally); and sewer ventilating columns. F. Durkin, B.E. Dep. £5.

SEPTEMBER 17.

***†Newcastle-upon-Tyne T.C.**—Installation of ironing machine at laundry, Elswick Grange, Westgate-rd. City Estate and Property S.

SEPTEMBER 18.

Southport and District Water Board.—Painting work at Bickerstaffe pumping station and cottages, Bickerstaffe, and Scarth Hill pumping station and cottages, Ormskirk. Engineer and Manager, 14, Portland-st. Dep. £2.

SEPTEMBER 19.

Kirkcaldy T.C.—Electric light installation in two first-aid posts. Electrical E.

SEPTEMBER 20.

Clitheroe T.C.—External painting of houses, Henthorn-rd., Seedall-av., Edisford-rd., and The Crescent. B.E. and S., Church-st.

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SEPTEMBER 27.

Burnley C.B.—Heating engineer's work required at North Bridge Mill. B.E. and S. Dep. £1 1s.

SEPTEMBER 30.

***Metropolitan Water Board.**—Heating installation at Hampton. Chief E., Rosebery-av., E.C.1.

MATERIALS.

SEPTEMBER 23.

Hemsworth R.D.C.—Metal windows for fire and ambulance station at Moorthorpe, South Kirkby. S. Price, E. and S.

ENGINEERING, IRON AND STEEL.

SEPTEMBER 16.

Loughborough T.C.—170 yds. of 7-in. C.I. pipe sewer and 1,100 yds. excavation for 3-in. C.I. rising main, and providing and laying about 750 yds. of 6-in. glazed stoneware pipe sewer, together with manhole and other appurtenant works, also small underground ejector chamber and sump. W. Granger, Water E. Dep. £2 2s.

SEPTEMBER 19.

South African Public Works Dept.—Seven electric passenger lifts, two electric goods lifts and three electric service lifts at the new G.P.O. Building at Cape Town. Dept. of Overseas Trade, S.W.1. (Ref. T. 21012/40.)

SEPTEMBER 21.

Rhyl U.D.C.—150 tons of interlocking steel sheet piling over a distance of approximately 320 lin. yds. on foreshore. T. Lomax, E. and S. Deposit £2 2s.

ROAD, SEWERAGE AND WATER WORKS.

SEPTEMBER 17.

Hebden Royd U.D.C.—Renewing garden paths and footpaths adjoining houses, Eaves estate, with tarred limestone. H. L. Bottomley, E. and S.

SEPTEMBER 19.

Stratford-upon-Avon R.D.C.—224 lin. yds. of glazed stoneware sewer, etc., at Alderminster. H. J. Weeks, S., 11, Guild-st.

SEPTEMBER 21.

Eccles T.C.—Reinstatement of tramway tracks in Regent-st., Church-st., and Liverpool-rd. B.E. and S.

Louth Board of Health.—Works in connection with water supply at Ardee. P. H. McCarthy and Son, consulting engineers, 26, Lower Leeson-st., Dublin. Dep. £5 5s.

Wenlock T.C.—Drainage work, etc., at proposed cemetery, Castle Green, Coalbrookdale. J. Hickman and Son, architects, 1, Market-st., Wellington. Dep. £2 2s.

SEPTEMBER 23.

Haverfordwest T.C.—Laying drains and water main at Winch-la. Cattle Mart. R. G. Henderson, B.S.

Mountain Ash U.D.C.—Renewal of water mains at Cefnpennar. Arthur Williams, S.

Wicklow Board of Health and Public Assistance.—Sewerage scheme at Tinahely. P. Caffrey, Board's Engineer, Aughrim. Dep. £10.

SEPTEMBER 27.

Roscommon Board of Health.—Improvements to Boyle water supply. P. H. McCarthy and Son, consulting engineers, 26, Lower Leeson-st., Dublin. Dep. £5 5s.

SEPTEMBER 30.

Wexford T.C.—Improvements to waterworks. Delap and Waller, consulting engineers, 16, Molesworth-st., Dublin. Dep. £10 10s.

Public Appointments.

SEPTEMBER 17.

Bradford T.C.—Temporary Architectural Assistant. City Architect.

A Mayoral Election, Northampton.

Councillor A. L. Chown has been elected as Mayor of Northampton for the coming electoral year. Mr. Chown is a partner in the building firm of Chowns Ltd., and was President in 1926 of the Northampton Master Builders' Association. He has also held office in the Midland Federation of Building Trades Employers.

CURRENT AND PROPOSED BUILDING WORK*

Accrington.—T.C. proposes refronting public library, at £1,500. Plans by H. Sanderson, B.E.

Belper.—U.D.C. prepared scheme for water supply to Holbrook, at £17,000. Plans by F. Hodson, Consulting E., Loughborough.

Cheadle.—W. Hargreaves & Co., Ltd., engineers, Old-rd., propose extensions.

Cheshire.—M.H. proposes three emergency hospitals. Plans by F. Anstead Browne (F.), County Architect, The Castle, Chester.

Chester.—Grosvenor Motor Co., Ltd., 42, Foregate-st., propose extensions, Paddock garage, St. Michael's-st., and Pepper-st.

Doncaster.—West Riding E.C. propose re-slating Barnburgh village school, at £300.

Huyton.—Rev. P. Kennedy, P.P. Church of St. Columba, Longview Estate, acquired "Rosebank House" for conversion into junior and infants' school for 200.

Middlesbrough.—No contracts yet placed for alterations in Linthorpe-rd., for Montague Burton, Ltd., Hudson-rd. Mills, Leeds. Plans by N. Martin, firm's staff architect.

Mold.—U.D.C. to adapt part of building for fire station.

Newcastle-on-Tyne.—No contracts let yet for alterations to "Forester's Arms" hotel. Architect, E. M. Lawson, Barras-bldgs, Barras Bridge.

Ormskirk.—E.C. approved plans for Maghull junior and infants' school for Lancashire E.C., at £4,600. Plans by S. Wilkinson (F.), County Architect, Preston. Tenders to be invited.

Preston.—E.C. propose extensions to generating station.

Sheffield.—Central Electricity Board acquired site adjoining Neepsend generating station for terminal tower.—T.C. approved: heat treatment building, blacksmith's shop and extensions to foundry, S. Osborn & Co., Ltd.; workshop, J. W. Best & Co., St. Peter's-close.

Skipton.—Trustees of Cononley Methodist Church propose church and schools. James Hartley & Son, architects, Swadford-chams.

Stretford.—T.C. approved estimate of £250, prepared by Borough Surveyor, in respect of light and ventilation at Seymour Park school.—Further estimate prepared by B.S., for restoration or repair of protective works at two entrances at town hall, at £100.—Plans passed: Works extension, Switchgear & Cowan, Ltd.; works extension, British Oxygen Co., Ltd.; paint shop, etc., E. Boydell & Co., Ltd.; store, Trussed Concrete Steel Co., Ltd.; shed, Lancashire Associated Collieries.

Warwickshire.—E.C. propose additions to Hillmorton Paddox elementary school, near Rugby. Plans by A. C. Bunch (F.), County Architect, Warwick.

Windsor.—Plans for alterations to Layton's restaurant in Thames-st. approved. Architects, Messrs. Eginton & Spink, High-st., Windsor.

The Red Cross Penny-a-Week Fund.

Having enrolled its three millionth regular contributor, the Red Cross Penny-a-Week Fund, which was launched on January 29 of this year, has now set itself the task of registering the five millionth by the end of 1940. If this aim is achieved the workers of Britain will be contributing nearly £21,000 a week to Red Cross funds, rather more than a million pounds a year. Details of the scheme (designed to meet the whole of the cost of the provision of food parcels, medical and other comforts, etc., for prisoners of war in Germany) may be obtained from the Red Cross Penny-a-Week Fund, 89, Kingsway, London, W.C.2.

* See also List of Contracts Open.

**** In these lists every care is taken to ensure that information given is accurate and up to date, but it may occasionally happen that, owing to building owners taking the responsibility of commencing work before plans are finally approved by the local authorities, "proposed" works at the time of publication have been actually commenced.**

EMERGENCY INQUIRY BUREAU

Questions from readers arising out of War-time difficulties and recent Emergency legislation will be answered by a special staff of contributors. Questions, which should be addressed to the Editor, should be accompanied by a stamped addressed envelope.

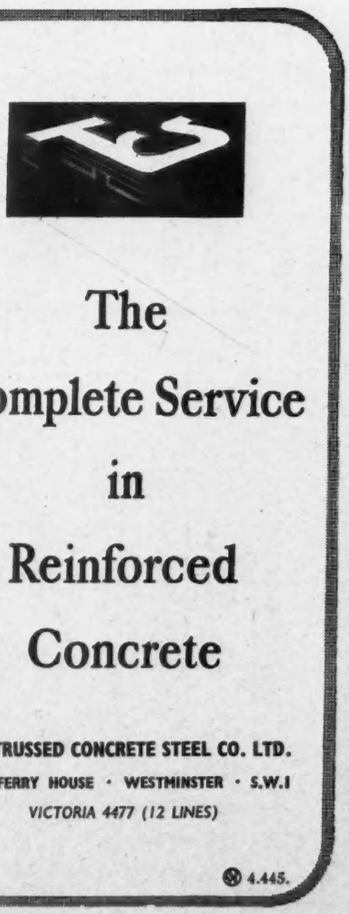
Sub-contractors and Air Raid Damage.

SIR,—*We shall be glad if you will inform us of the position of sub-contractors in the case of damage to work caused by air raids during progress of the contract. We have several contracts on hand and have been given to understand, not by the main contractors, that we are responsible for any loss incurred, but up to now we have had the impression that the contractor or proprietors of buildings—in the case of schools the Education Authority—would bear any loss incurred. Your advice would be appreciated.* F. G. M.

A correspondent writes:—

Unless there is provision in the sub-contract that the sub-contractor shall go free of damage caused by air raids, he is undoubtedly liable to the general contractor for any damage caused to his particular work under the sub-contract in an air raid.

It may be that the general contractor is, under his contract with the employer, freed from liability in the event of damage done to his work under the main contract; but, unless the terms of the main contract as to such damage have been included in the sub-contract, then, as stated, the sub-contractor is liable to the main contractor with whom his sub-contract is made. In general, there is no privity of contract with the employer in a building contract. In these circumstances, then, querist should see to it that he is protected by the introduction of a clause in his sub-contracts—a clause which should be carefully drafted.



Payment of Building Operatives for Emergency Duties.

SIR,—*Our building trades operatives have served, and may have to serve, after their normal working hours by standing by for rescue and demolition works (if raids continue after 5 o'clock), or as factory guards throughout the night on patrol, or sleeping, or possibly occupied at times in sandbagging, etc.*

The worker is enrolled as a "volunteer," and has received, and would receive, bonus money, but should he be paid his tradesman's rates—whatever his duties after his working day—which would also include overtime rate, or can he accept the gratuities on a flat-rate payment as issued to co-workers who are not building trade operatives or in any Union at all—e.g., if a painter is employed on fire patrol or filling sandbags after his working hours, should he be paid 1s. 9½d. per hour plus overtime?

Our desire is to protect the volunteer from complaints by a non-volunteer if the former accepts the generous terms that are offered but which are not overtime rates or building trade rates under emergency conditions.

READER.

We are of the opinion that building trades operatives should be paid standard rates of wages and overtime rates where necessary whilst engaged on building trade work. Operatives, however, should be free to volunteer for any war emergency duties (other than engagement on building trade work) outside normal working hours, to be carried out either voluntarily or on such terms as may be agreed between themselves and their employers.

B.S. SPECIFICATIONS

Portland and High Alumina Cements.

British Standard Specifications for Portland and High Alumina Cement (B.S. Nos. 12 and 915 respectively) have just been issued.

There are two major features of the revision of the Specification for Portland Cement (B.S. 12-1940). One is the amplification of the specification to include cement of the rapid-hardening type, for which there has, so far, not been a specification. The other is the replacement of the test for determining the tensile strength of a standard briquette by a compression test on a cement-sand mortar cube. The desirability of making this change was mentioned in the Foreword to the 1931 edition. Since that date the compression test has been the subject of further investigation, both at the Building Research Station and also by a panel of experts. It has been found to give results with different gaugers more consistent than those obtained by the tensile test, whilst another advantage is that the strength of the mortar cubes can be related to that of concrete made with the same cement. The cement mortar cubes are compacted in a specially designed vibration machine which is illustrated by a photograph and fully dimensioned drawings. As it is appreciated that the adoption of the new test will require the installation of the appropriate testing apparatus, the tensile test has been retained for use when specially required.

The general form of the Specification for High Alumina Cement (B.S. 915) follows the same lines as B.S. 12, but in this case, as there was no traditional tensile test, the compression test has been included without the alternative of a tensile test.

Copies of these British Standards can be obtained from the British Standards Institution, Publications Department, 28, Victoria-street, London, S.W.1, price 2s. 3d. each, post free.

Building Firm's "Spitfire."

Messrs. Wates, Ltd., of London-road, Norbury, have recently sent a cheque to the Minister of Aircraft Production for the purchase of a "Spitfire," and this has been gratefully acknowledged on behalf of the nation by Lord Beaverbrook.

RATES OF WAGES IN THE BUILDING TRADE

AS AND FROM 1st JUNE, 1940

[Every endeavour is made to ensure accuracy, but we cannot be responsible for errors]

	Crafts-men.	Lab-ourers.
Aberavon	1/9	1/4½
Aberdare	1/9	1/4½
Abergavenny	1/9	1/4½
Abingdon	1/7½	1/3
Accrington	1/9	1/4½
Aldeburgh	1/5½	1/1½
Aldershot	1/7½	1/3
Alfreton	1/9	1/4½
Alnwick	1/8½	1/3½
Altrincham	1/9	1/4½
Amble	1/8½	1/3½
Amersham	1/7½	1/3
Ammanford	1/9	1/4½
Andover	1/7	1/2½
Ardingley	1/7	1/2½
Arundel	1/7	1/2½
Ascot	1/7	1/2½
Ashby-de-la-Zouch	1/9	1/4½
Ashford (Kent)	1/7	1/2½
Ashford (Middlesex)	1/9	1/4½
Ashington	1/8½	1/3½
Ashtead	1/9	1/4½
Ashton-under-Lyne	1/9	1/4½
Aylesbury	1/7	1/2½
Aylsham	1/6	1/2
Bagshot	1/7	1/2½
Banbury	1/7	1/2½
Barnsley	1/9	1/4½
Barnstaple	1/7	1/2½
Barrow-in-Furness	1/9	1/4½
Barry	1/9	1/4½
Basingstoke	1/7	1/2½
Bath	1/8½	1/3½
Batley	1/9	1/4½
Beaconsfield	1/7½	1/3
Beccles	1/5½	1/1½
Bedford	1/8½	1/3½
Berkhamsted	1/7	1/2½
Berwick	1/8½	1/3½
Beverley	1/9	1/4½
Bexhill-on-Sea	1/7½	1/3
Bideford	1/7	1/2½
Biggleswade	1/7	1/2½
Billericay	1/6½	1/2½
Birchington	1/7	1/2½
Birkenhead	‡§1/11	¶
Birmingham†	1/9	1/4½
Bishop Auckland	1/9	1/4½
Bishops Stortford	1/8	1/3½
Blackburn	1/9	1/4½
Blackpool	1/9	1/4½
Blyth	1/9	1/4½
Bognor Regis	1/7	1/2½
Bolton	1/9	1/4½
Bournemouth	1/8	1/3½
Bracknell	1/7	1/2½
Bradford	1/9	1/4½
Bradford-on-Avon	1/6	1/2
Braintree	1/7	1/2½
Brentwood	1/8½	1/3½
Bridgwater	1/7½	1/3
Bridlington	1/8½	1/3½
Brighouse	1/9	1/4½
Brighton	1/8	1/3½
Bristol	1/9	1/4½
Broadstairs	1/7	1/2½
Bromsgrove	1/8½	1/3½
Buckley	1/9	1/4½
Bungay	1/5	1/1½
Burnham-on-Crouch	1/5½	1/1½
Burnley	1/9	1/4½
Burslem	1/9	1/4½
Burton-on-Trent	1/9	1/4½
Bury	1/9	1/4½
Bury St. Edmunds	1/6½	1/2½
Buxton	1/8½	1/3½
Byfleet	1/7½	1/3
Cambridge	1/9	1/4½
Canterbury	1/7	1/2½
Cardiff	1/9	1/4½
Carlisle	1/9	1/4½
Carnforth	1/9	1/4½
Castleford	1/9	1/4½
Caterham	1/9	1/4½
Chard	1/6	1/2
Chatham	1/8	1/3½
Chelmsford	1/8½	1/3½
Cheltenham	1/8	1/3½
Chepstow	1/8½	1/3½
Chertsey	1/8	1/3½
Chester	1/9	1/4½
Chesterfield	1/9	1/4½
Chichester	1/7	1/2½
Chorley	1/9	1/4½
Cirencester	1/6½	1/2½
Clacton	1/7	1/2½
Cleveleys	1/9	1/4½
Clitheroe	1/9	1/4½
Cobham (Surrey)	1/8	1/3½
Colchester	1/8½	1/3½
Colwyn Bay	1/8	1/3½
Congleton	1/8½	1/3½
Coventry	1/9	1/4½
Cranbrook	1/7	1/2½
Cranleigh	1/7	1/2½
Crawley	1/7	1/2½
Crewe	1/8½	1/3½
Cromer	1/6	1/2
Crowborough	1/7	1/2½
Cuckfield	1/7	1/2½
Darlington	1/9	1/4½
Darwen	1/9	1/4½
Daventry	1/7½	1/3
Deal	1/7	1/2½
Denbigh	1/8	1/3½
Derby	1/9	1/4½
Devizes	1/6	1/2
Dewsbury	1/9	1/4½
Didcot	1/7	1/2½
Diss	1/5½	1/1½
Doncaster	1/9	1/4½
Dorchester	1/6½	1/2½
Dorking	1/7½	1/3
Dover	1/7	1/2½
Dovercourt	1/7	1/2½
Driffield	1/7½	1/3
Droitwich	1/8½	1/3½
Dudley	1/9	1/4½
Dunstable	1/7½	1/3
Durham City	1/9	1/4½
Eastbourne	1/8	1/3½
E. Glam. (Mon. Val.)	1/9	1/4½
East Grinstead	1/7	1/2½
Edenbridge	1/7	1/2½
Ely	1/6	1/2
Epping	1/9	1/4½
Exeter	1/8½	1/3½
Exmouth	1/7½	1/3
Fakenham	1/6	1/2
Falmouth	1/7½	1/3
Fareham	1/8	1/3½
Faversham	1/7	1/2½
Felixstowe	1/8	1/3½
Filey	1/7½	1/3
Fleetwood	1/9	1/4½
Flint	1/9	1/4½
Folkestone	1/7	1/2½
Frinton-on-Sea	1/7	1/2½
Frome	1/6	1/2
Gainsborough	1/8	1/3½
Gateshead	1/9	1/4½
Gillingham (Kent)	1/8	1/3½
Glossop	1/9	1/4½
Gloucester	1/8½	1/3½
Godalming	1/7	1/2½
Goole	1/9	1/4½
Gosport	1/8½	1/3½
Grantham	1/8	1/3½
Gravesend	1/8½	1/3½
Great Yarmouth	1/7	1/2½
Grimsby	1/9	1/4½
Guildford	1/7	1/2½
Guilsborough	1/7½	1/3
Halifax	1/9	1/4½
Hanley	1/9	1/4½
Harpenden	1/8	1/3½
Harrogate	1/9	1/4½
Hartlepools	1/9	1/4½
Harwich	1/7	1/2½
Haslemere	1/7	1/2½
Hastings	1/7	1/2½
Hatfield	1/8½	1/3½
Haywards Heath	1/7	1/2½
Hednesford	1/8½	1/3½
Hemel Hempstead	1/8	1/3½
Henley-on-Thames	1/7	1/2½
Hereford	1/7	1/2½
Herne Bay	1/7	1/2½
Hertford	1/8½	1/3½
Heysham	1/9	1/4½
Hitchin	1/8	1/3½
Hoddesdon	1/8½	1/3½
Holt (Norfolk)	1/5½	1/1½
Horley	1/7	1/2½
Horsham	1/7	1/2½
Horwich	1/9	1/4½
Huddersfield	1/9	1/4½
Hull	1/9	1/4½
Hunstanton	1/6	1/2
Huntingdon	1/6½	1/2½
Ilfracombe	1/7	1/2½
Ingatestone	1/7½	1/3
Ipswich	1/8½	1/3½
Isle of Thanet	1/7	1/2½
Isle of Wight	1/6½	1/2½
Keighley	1/9	1/4½
Kenilworth	1/9	1/4½
Kettering	1/9	1/4½
Kidderminster	1/8½	1/3½
King's Lynn	1/7	1/2½
Kirkham	1/9	1/4½
Knowle	1/8½	1/3½
Lancaster	1/9	1/4½
Leamington	1/9	1/4½
Leatherhead	1/8	1/3½
Leeds	1/9	1/4½
Leicester	1/9	1/4½
Leighton Buzzard	1/6	1/2
Letchworth	1/8	1/3½
Lewes	1/7	1/2½
Lichfield	1/8	1/3½
Lincoln	1/9	1/4½
Littlehampton	1/7	1/2½
Liverpool	‡§1/11	¶
Llandudno	1/8	1/3½
Llanelly	1/9	1/4½
London—		
12m. radius	*1/10½	1/5½
12-15 m. radius	*1/10	1/5
Long Eaton	1/9	1/4½
Longton	1/9	1/4½
Loughborough	1/9	1/4½
Louth	1/7½	1/3
Lowestoft	1/7	1/2½
Luton	1/8½	1/3½
Macclesfield	1/8½	1/3½
Maidenhead	1/8	1/3½
Maidstone	1/7½	1/3
Malvern	1/7½	1/3
Manchester	1/9	1/4½
Manningtree	1/6	1/2
Mansfield	1/9	1/4½
March	1/6	1/2
Margate	1/7	1/2½
Market Harborough	1/8	1/3½
Matlock	1/7½	1/3
Melton Constable	1/5½	1/1½
Melton Mowbray	1/8	1/3½
Merthyr	1/9	1/4½
Middlesbrough	1/9	1/4½
Middleton	1/9	1/4½
Middlewich	1/8½	1/3½
Milford Haven	1/7½	1/3
Morecambe	1/9	1/4½
Morley	1/9	1/4½
Mundesley	1/6	1/2
Nantwich	1/8½	1/3½
Nelson	1/9	1/4½
Newark-on-Trent	1/8½	1/3½
Newbury	1/7	1/2½
Newcastle-on-Tyne	1/9	1/4½
Newcastle-u.-Lyme	1/9	1/4½
New Forest	1/7	1/2½
Newmarket	1/7	1/2½
Newport, Mon.	1/9	1/4½
Newport Pagnell	1/7	1/2½
Northampton	1/9	1/4½
Norwich	1/9	1/4½
Nottingham	1/9	1/4½
Nuneaton	1/9	1/4½
Oakham	1/7½	1/3
Oldham	1/9	1/4½
Ormskirk	1/9	1/4½
Oxford	1/8½	1/3½
Oxted	1/7½	1/3
Paignton	1/8½	1/3½
Peterborough	1/8½	1/3½
Plymouth	1/9	1/4½
Pontefract	1/9	1/4½
Pontypridd	1/9	1/4½
Port Talbot	1/9	1/4½
Portsmouth	1/8½	1/3½
Preston	1/9	1/4½
Pulborough	1/7	1/2½
Ramsgate	1/7	1/2½
Reading	1/8½	1/3½
Redditch	1/8½	1/3½
Redhill	1/7½	1/3
Ripon	1/7½	1/3
Rochdale	1/9	1/4½
Rochester	1/8	1/3½
Rugby	1/9	1/4½
Saffron Walden	1/6	1/2
St. Albans	1/8½	1/3½
St. Helens	1/9	1/4½
St. Neots	1/6½	1/2½
Salisbury City	1/6½	1/2½
Salisbury Plain	1/8	1/3½
Sawbridgeworth	1/7½	1/3
Saxmundham	1/5½	1/1½
Scarborough	1/8½	1/3½
Scunthorpe	1/9	1/4½
Selby	1/9	1/4½
Sevenoaks	1/7½	1/3
Sheerness	1/7	1/2½
Sheffield	1/9	1/4½
Shipley	1/9	1/4½
Shoeburyness	1/8½	1/3½
Shoreham	1/8	1/3½
Shrewsbury	1/8½	1/3½
Sittingbourne	1/7	1/2½
Skegness	1/8	1/3½
Sleaford	1/7½	1/3
Slough	1/8	1/3½
Southampton	1/8½	1/3½
Southend-on-Sea	1/8½	1/3½
Southport	1/9	1/4½
South Shields	1/9	1/4½
Spalding	1/7	1/2½
Stafford	1/8½	1/3½
Staines	1/8	1/3½
Stamford	1/8	1/3½
Stevenage	1/8	1/3½
Stockport	1/9	1/4½
Stockton-on-Tees	1/9	1/4½
Stoke-on-Trent	1/9	1/4½
Stourbridge	1/9	1/4½
Stourport	1/8½	1/3½
Stowmarket	1/6	1/2
Stratford-on-Avon	1/8	1/3½
Stroud	1/8	1/3½
Sunderland	1/9	1/4½
Sutton Coldfield	1/9	1/4½
Swaffham	1/5½	1/1½
Swanage	1/7	1/2½
Swansea	1/9	1/4½
Swindon	1/7½	1/3
Tamworth	1/8½	1/3½
Taunton	1/7½	1/3
Tenterden	1/7	1/2½
Thames Haven	1/9	1/4½
Thetford	1/6½	1/2½
Thorpe Bay	1/8½	1/3½
Todmorden	1/9	1/4½
Tonbridge	1/7½	1/3
Torquay	1/8½	1/3½
Totnes	1/7	1/2½
Trowbridge	1/6	1/2
Truro	1/6½	1/2½
Tunbridge Wells	1/7½	1/3
Uppingham	1/7½	1/3
Uttoxeter	1/7½	1/3
Wakefield	1/9	1/4½
Walsall	1/9	1/4½
Walsden	1/9	1/4½
Walton-on-Naze	1/7	1/2½
Ware	1/8½	1/3½
Warminster	1/6	1/2
Warrington	1/9	1/4½
Warwick	1/9	1/4½
Wellingborough	1/8½	1/3½
Welwyn	1/8	1/3½
Welwyn Gar. City	1/9	1/4½
Wells (Norfolk)	1/5½	1/1½
West Bromwich	1/9	1/4½
Westcliff-on-Sea	1/8½	1/3½
Weston-super-Mare	1/8	1/3½
Weybridge	1/8	1/3½
Weymouth	1/7	1/2½
Whitby	1/8	1/3½
Whitstable	1/7	1/2½
Widnes	1/9	1/4½
Wigan	1/9	1/4½
Wigton	1/7½	1/3
Willington	1/9	1/4½
Wilmslow	1/9	1/4½
Winchester	1/7½	1/3
Windermere	1/7½	1/3
Windsor	1/8	1/3½
Wisbech	1/6½	1/2½
Witham	1/7	1/2½
Woking	1/7½	1/3
Wokingham	1/7	1/2½
Wolverhampton	1/9	1/4½
Woodbridge	1/6½	1/2½
Worcester	1/8½	1/3½
Workington	1/7½	1/3
Worksop	1/8½	1/3½
Worthing	1/7	1/2½
Wrexham	1/8½	1/3½
Wroxham	1/6½	1/2½
Wycombe	1/8	1/3½
Wymondham	1/6	1/2
Yeovil	1/7½	1/3
York	1/9	1/4½

* Painters 1d. less than other Craftsmen. † Plus 2d. per working day. ‡ Plasterers 1/11½.
¶ Tradesman's Labourers 1/5½. Navvies and General Labourers 1/4½.
§ Joiners, Plumbers, Bricklayers, Tilers and Masons receive 2/- per week or 4d. per day Tool Money.

For Building Trade Wages in Scotland, see page 274.

PRICES CURRENT OF MATERIALS *

Note: Owing to the exceptional circumstances which prevail at the present time prices of materials should be confirmed by inquiry. The prices for soft woods are for cash on delivery, and are subject to adjustment when the increased price of £22 per standard for national released stocks is finally fixed. At present linseed oil and genuine spirits of turpentine can only be supplied in cans in small quantities.

BRICKS, &c.

Delivered to site, City and Central Area, Full Lorry Loads.

	£ s. d.
Best Stocks	4 18 0
Second Hard Stocks	4 11 0

Per 1,000. Delivered at London Goods Stations.

2½ in. Phorpres. A discount of 6d. 1,000 only monthly account.	King's Cross Station per 1,000. s. d.	To sites in W.C. District. per 1,000 s. d.
Pressed bricks	51 0	57 0
Cellular bricks	51 0	57 0
Keyed bricks	53 0	59 0
Cellular Keyed bricks	53 0	59 0
Rustic bricks	71 0	77 0
Cellular Rustic bricks	71 0	77 0
Single Bullnose	71 0	77 0
White bricks	71 0	77 0
White Midhurst Facing Bricks (delivered London site)	3 12	6
Best blue Pressed Staffs. (London Stns.)	8 18	0
Do. Bullnose (London Stns.)	9 8	0
Blue Wire Cuts (London Stns.)	7 15	6

Best Stourbridge Fire Brick (London Stns.):— 2½ in. 8 0 0 3 in. 9 15 0

GLAZED BRICKS. (London Stns.)

Best White Ivory and Salt Glazed Stretcher	26 0 0	D'ble Str'tch'rs	34 10 0
		D'ble Headers	31 10 0
Headers	25 10 0	One side & two ends	35 10 0
Quoins, Bullnose and 4½in. Flats	32 10 0	Two sides & one end	36 10 0
		Splays and Squints	34 0 0

Second Quality, £2 per 1,000 less than best. Cream and buff, £2 extra over white. Other colours. Hard Glaze, £5 10s. extra over white.

PARTITION SLABS.

Delivered London Area.

"PHORPRES" HOLLOW PARTITION BLOCKS.

2" per yd. sup.	2 3	3" per yd. sup.	2 9
2½" " "	2 6	4" " "	3 1

CLINKER CONCRETE.

2" per yd. sup.	1 6	3" per yd. sup.	2 0
2½" " "	1 8	4" " "	2 4

CRANHAM TERRA COTTA.

2" per yd. sup.	3 0	3" per yd. sup.	3 8
2½" " "	3 6	4" " "	4 7

HEMPSTEAD—KEYED TWO SIDES.

12" x 9" x 2"	2 6	12" x 9" x 3"	3 0
12" x 9" x 2½"	2 9	12" x 9" x 4"	3 9

Per yard super d/d. Free on site, London.

SAND.

Thames Ballast	7 9	per yd.
Pit Ballast	7 3	" "
Pit Sand	9 9	" "
Washed Sand	10 9	" "
¼ in. Shingle	8 0	" "
¾in. Broken Brick	12 0	" "
Pan Breeze	8 3	" "

delivered 2 miles radius Paddington.

CEMENT.

Best British Portland Cement. Standard Specification delivered London Area.

	£ s. d.
4 ton loads and upwards site, Per ton	2 4 6
1 ton to 4 tons site	2 7 6
Alongside Vauxhall in 80 ton lots	2 2 0
"Ferrocrete" Rapid Hardening Cement—	
4 ton loads and upwards site	2 10 6
1 ton to 4 tons site	2 13 6
Alongside Vauxhall in 80 ton lots	2 8 0

Stored in Reserved Bins at works. 1/6 per ton extra.

"Aquacrete" Water Repellent, "Blue Circle" cement, 30/- per ton extra or ordinary "Blue Circle" prices.

	£ s. d.
"Colorcrete" Nos. 1 and 2. Coloured Rapid Hardening Portland Cement	3 14 6
"Colorcrete" not rapid hardening, according to colour, from £7 to £15 10s. per ton.	
"Snowcrete" White Portland Cement	9 5 0
Super Cement (Waterproof)	3 14 6

NOTE.—Paper bags will be charged at the rate of 5/- nett per ton. Jute sacks charged 1s. 9d. nett each and 1/6 nett each allowed if returned to works within two weeks, in good condition.

Carriage will be paid by makers on returned empty jute sacks.

Roman Cement £7 5 Keene's Cement, White £6 10 0
Parian Cement 6 10 " " Pink 6 5 0
Cementone Colours for cement according to tints per cwt. from £2 16s. 0d.

PLASTER.

	£ s. d.		£ s. d.
Coarse, Pink	3 12 6	Sirapite, Coarse	4 3 0
" White	4 0 0	" Finish	4 11 0
Pioneer	4 3 0		

Above prices for 4-ton loads and over London Area.

Best Ground Blue Lias Lime	2 15 0	Grey Stone Lime	2 10 0
		Chalk Lime	2 10 0
Granite Chippings	1 10 0	Hair per cwt.	2 7 6

NOTE.—Sacks are charged 1s. 9d. each, and credited 1s. 6d., if returned in good condition within three months, carriage paid.

Stourbridge Fireclay in sacks 37s. per ton at rly. dep.

STONE.

	s. d.
BATH STONE.—Delivered in railway trucks at Westbourne Park, Paddington, G.W.R., or South Lambeth, G.W.R., per ft. cube	2 11½
BEER STONE—RANDOM BLOCK—	
Free on rail at Seaton Station, per ft. cube	2 3
Delivered free on rail Nine Elms, S.R. "	3 1½

Selected approximate size one way, 1d. per cubic ft. extra, selected approximately three sizes or for special work, 3d. per cubic ft. extra.

	s. d.
PORTLAND STONE—	
Brown Whitbed, in random blocks of 20 ft. average, delivered in railway trucks at Nine Elms, S. Rly., South Lambeth Station, G.W.R., and Westbourne Park, Paddington, G.W.R., per ft. cube	4 6
Do. do. delivered on road waggons as above stations, per ft. cube	4 6
White basebed, 3d. per ft. cube extra.	
NOTE.—1d. per ft. cube extra for every ft. over 20 ft. *average* and ½d. beyond 30 ft.	
HOPTON-WOOD STONE—	
F.O.R. Quarries, Wirksworth, Derbyshire, Random blocks from 10 ft. and over P.ft.cb.	14 0
Sawn two sides	22 6
HOPTON-WOOD STONE—	
Sawn three or four sides	27 9
YORK STONE, BLUE—*Robin Hood Quality.*	
Delivered at any Goods Station, London.	
6 in. sawn two sides landings to sizes (under 30 ft. super) per ft.super	5 6
6 in. rubbed two sides, ditto "	6 3
3 in. sawn two sides slabs (random sizes) "	2 7
2 in. to 2½ in. sawn one side slabs (random sizes) (paving) "	1 8½
1½ in. to 2 in., ditto "	1 4½
HARD YORK—	
Delivered at any Goods Station, London.	
Scrappled random blocks. per ft. cube	6 10
6 in. sawn two sides landings to sizes (under 40 ft. super) per ft.super	5 7½
6 in. rubbed two sides, ditto "	6 9
4 in. sawn two sides slabs (random sizes) "	3 5
3 in. ditto ditto "	2 8
2 in. self-faced random flags Per yd. super	8 9

CAST STONE.

Delivered in London are in full van loads, per ft. cube: Plain, 7s. 6d. Moulded, 8s. 6d. Sills, 10s. 0d.

HARD WOOD.

1 INCH AND UP THICK.

Average price for prime quality.	£ s. d.
Dry Austrian Wainscot, per ft. cube	0 17 0
Dry American and/or Japanese Figured Oak, per ft. cube 10 6 to	0 13 0
Dry American and/or Japanese plain Oak, per ft. cube	0 11 6
Dry sq. edged Honduras Mahogany, per ft. cube	0 15 0
Dry log-cut Honduras Mahogany, per ft. cube 12 6 to	0 16 0
Dry Cuba Mahogany, per ft. cube	0 18 0
Dry Teak, per ft. cube	0 14 0
Dry American Whitewood, per ft. cube	0 10 6
Dry Australian Walnut, per ft. cube	0 19 0
Dry Queensland Silky Oak, per ft. cube	0 12 6
Dry African Mahogany, per ft. cube	0 10 0
Dry African Whitewood, per ft. cube	0 8 0
Dry English Wainscot Oak, per ft. cube	0 16 0
Best Scotch Glue, per cwt.	3 0 0
Liquid Glue, per cwt. 4 7 0 to	5 10 0

SOFT WOOD.

MERCHANTABLE BRITISH COLUMBIAN PINE.

	Minimum. £ s. d.	Maximum. £ s. d.
Scantlings in imported sizes, 2in. by 3in. to 4in. by 11in.	43 10 0	53 0 0

Having secured the Contract— What about the Steel Scaffolding?

For the lowest Prices apply to the Oldest Firm in The Scaffolding Trade.

STEPHENS & CARTER LTD.

The British Steel Scaffolding Co.

731-761, HARROW RD., N.W.10.

Telephone No. Ladbroke 1191 (6 lines).

PLANED BOARDS.

PRIME CLEAR BRITISH COLUMBIAN PINE.

	Per standard. £ s. d.
1in. by 11in. } 1in. by 9in. }	67 10 0

	Per square. s. d.
1in. plain edge flooring	53 0
1¼in. ditto	66 6
1in. tongued and grooved	53 0
1¼in. ditto	66 6

MATCHING.

	Per square. s. d.
⅝in.	37 6
¾in.	42 0
1in.	55 0

SLATES.

First quality slates from Penrhyn or Portmadoc, carriage paid in full truck loads to London Rate Station. Per 1,000 actual.

	£ s. d.		£ s. d.
24 by 12	31 13 6	18 by 10	16 15 0
22 by 12	26 12 0	18 by 9	15 7 6
22 by 11	23 18 6	16 by 10	14 11 6
20 by 12	23 8 0	16 by 8	11 10 0
20 by 10	21 0 0		

TILES.

Delivered at London rate stations in full truck loads of not less than 6 tons. Per 1,000 f.o.r. London

	£ s. d.
Best machine-made tiles from Broseley or Staffordshire district	4 10 0
Ditto hand-made ditto	5 7 6
Ornamental ditto	5 12 6
Hip and valley tiles (per dozen) Hand-made	0 9 0
Machine-made	0 8 6

METALS.

JOISTS, GIRDERS, &c., TO LONDON STATION PER TON—

	£ s. d.
R.S. Joists, cut and fitted	£19 5 0
Plain Compound Girders	21 15 0
" Stanchions	24 5 0
In Roof Work	28 15 0

NOTE.—These prices are for standard pieces and not special pieces of an awkward nature.

MILD STEEL ROUNDS.—To London Stations, per ton.

Diameter.	£ s. d.	Diameter.	£ s. d.
¼ in.	19 15 0	⅝ in. to ½ in.	18 5 0
¼ in.	18 15 0	¾ in. to 2½ in.	17 15 0

WROUGHT TUBES AND FITTINGS.

Deliveries from works.

Deliveries from London stock further 2½% gross.

Fittings. 10/17

	Tubes. ⅛"/6" %	Tubulars. ¼"/6" %	and Flanges. 19/24 %	⅜"/2" %	2½"/6" %
Light weight	55½	—	48	51½	58
Heavy weight	48½	48½	40½	41½	50½
Gavl.lightweight	44½	—	39½	40½	49½
Galv.heavyweight	35½	35½	31½	30½	41½

Tubes and tubulars sizes ¼"/⅜" inclusive, charged extra of 5% less gross.

Fittings. Figs. 25/34 5% less gross discount.

Terms.—Nett cash end of month following date of invoice. Carriage paid on lots of £10 nett value and over.

C.I. HALF-ROUND GUTTERS—London Prices ex Works.

per yd. in 6 ft. lengths.	Gutters.	Angles and Nozzels.	Stop Ends.
3 in.	1/3½	1/0½	4d.
3½ in.	1/5	1/2½	4d.
4 in.	1/5	1/3½	5½d.
4½ in.	1/6	1/6	6½d.
5 in.	1/9½	1/7½	7½d.

O.G. GUTTERS.

3 in.	1/8½	1/5½	4½d.
3½ in.	1/10½	1/5½	5½d.
4 in.	1/10½	1/6	6½d.
4½ in.	1/11½	1/9	7½d.
5 in.	2/5½	2/-	9d.

RAIN WATER PIPES, &c.

Per yd. in 6 fts.	Bends, stock Pipe.	Branches, angles,	stock angles.
2 in.	1/11½	1/3½	1/11½
2½ in.	2/0½	1/6	2/3½
3 in.	2/5	1/10½	2/9½
3½ in.	2/10½	2/3	3/3
4 in.	3/3½	2/8½	3/11½

NETT PRICES.

Tonnage allowance—4-ton lots, 5 per cent.
2-ton lots, 2½ per cent.

L.C.C. COATED SOIL PIPES—London Prices, ex Stock.

	Bends, stock Pipe.	Branches, angle.	stock angles
2 in. per yd. in 6 fts.	3/3½	2/3½	2/9½
2½ in. "	3/11½	2/6½	3/6
3 in. "	4/2½	2/9½	4/2½
3½ in. "	4/3½	3/6	4/10½
4 in. "	4/8½	3/11½	5/7½

L.C.C. COATED DRAIN PIPES.—London Prices, ex Stock.

	Bends, stock Pipe.	Branches. angles.	stock angles
3in. per yd. in 9ft. lengths	5/1	5/11½	9/5½
cwt. qr. lbs.			
4 in. " 1 1 20	7/6	6/9	11/10½
5 in. " 1 2 22	9/1	12/2	18/5
6 in. " 2 0 6	10/9	14/0½	23/0

Gaskin for joining 65/- per cwt.

* The information given on this page has been specially compiled for THE BUILDER, and is copyright. The aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the highest or lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information. Prices are subject to 2½ per cent. cash discount.

PRICES CURRENT OF MATERIALS—(*contd.*)

	Per ton basis in London. £ s. d.		£ s. d.
IRON.—Staffordshire Crown, Merchant quality	16 12 6	to	17 17 6
IRON—Staffordshire Marked Bars	19 10 0	to	21 10 0
Mild Steel Bars	17 8 6	to	18 18 6
Mild Steel Hoops	19 2 6	to	19 12 6
	Ex Merchant's Stock, per ton (two-ton lots).		
Soft Steel Sheets, C.R. and C.A.—	£ s. d.		£ s. d.
20 gauge	21 10 0	to	23 17 6
24 gauge	21 15 0	to	23 12 6
26 gauge	22 10 0	to	24 7 6
Galvanised Corrugated Sheets, 6 ft. to 9 ft.—			
20 gauge	23 11 3	to	24 16 3
24 gauge	24 1 3	to	25 6 3
26 gauge	25 6 3	to	27 1 3
Galvanised Flat Sheets, C.R. and C.A.—			
20 gauge	25 1 3	to	26 18 9
24 gauge	25 11 3	to	27 8 9
26 gauge	26 16 3	to	28 13 9
	Per ton. £ s. d.		£ s. d.
Cut Nails, 3 in. and up	23 10 0	to	25 0 0
	ALL NETT.		

METAL WINDOWS.—Standard sizes, suitable for complete houses, including all fittings, painting two coats, and delivery to job, average price about 1s. 4d. to 1s. 7d. per foot super.

COPPER.

		s. d.
Seamless Copper tubes (basis)	per lb.	1 1
Strong sheet	"	1 3
Thin	"	1 4
Copper nails	"	1 3
Copper wire	"	1 3

PLUMBERS' BRASS WORK.

Delivered in London.
Stamped by Met. Water Board.

CRUTCH HEAD SCREW DOWN BIB COCKS FOR IRON. EASY CLEAN.

½ in. ¾ in.
29/- 45/- per doz.

CHROMIUM PLATED TOILET SCREW DOWN BIB COCKS FOR IRON. EASY CLEAN.

½ in. ¾ in.
40/— 59/- per doz.

SCREW DOWN STOP COCKS FOR IRON.

½ in. ¾ in. 1 in. 1¼ in. 1½ in. 2 in.
31/- 44/6 75/- 175/- 250/- 396/- per doz.

SCREW DOWN STOP COCKS WITH TWO UNIONS FOR LEAD.

½ in. ¾ in. 1 in. 1¼ in. 1½ in. 2 in.
42/6 65/- 102/- 195/- 210/- 510/- per doz.

DOUBLE NET BOILER SCREWS.

½ in. ¾ in. 1 in. 1¼ in. 1½ in. 2 in.
7/6 9/- 14/- 24/- 37/6 54/- per doz.

HEAVY CROYDON BALL VALVES.

½ in. ¾ in. 1 in. 1¼ in. 1½ in.
33/6 55/6 85/- 165/- 237/- per doz.

CAPS AND SCREWS.

1½ in. 1½ in. 2 in. 3 in. 3½ in. 4 in.
9/- 11/- 16/6 29/- 42/- 45/- per doz

BRASS FERRULES OF SLEEVES.

1½ in. 2 in. 3 in. 3½ in. 4 in.
9/6 11/6 20/6 26/- 37/- per doz.

DRAWN LEAD TRAPS WITH BRASS CLEANING SCREWS.

	1½ in.	1½ in.	2 in.	3 in.
8 lb. Lead P.	17/6	23/-	32/6	66/6 per doz.
8 lb. Lead S.	21/6	27/6	39/6	73/- per doz.

SOLDER.—Plumbers, 1/2. Tinmen's, 1/4. Blowpipe, 1/6 per lb.

PAINTS, &c.

		£ s. d.
Raw Linseed Oil, in drums	per gallon	0 5 4
Boiled " " in drums	"	0 5 7
Turpentine, in drums (10 gals.)	"	0 5 3
Genuine Ground English White Lead, per ton (In not less than 5-cwt. casks).		61 0 0
Extra for 1-cwt. kegs over 5-cwt. casks is 2/9 cwt.		
GENUINE WHITE LEAD PAINT "Father Thames," "Nine Elms," "Park," "Supremus," "St. Paul's," "Morganswyte," "Polacco," "J" Brand, and other best brands (in 14 lb. tins) not less than 5-cwt. lots	per ton delivered	83 10 —
Red Lead. Dry (packages extra)	per ton	52 0 —
Best Linseed Oil Putty (1 ton lots)	per cwt.	0 17 1½
Size. XD quality	fkn.	0 3 6

Turpentine substitute can be obtained and prices vary according to the quality from 2/9 gallon upwards.

VARNISHES, &c.

		Per gallon.
Oak Varnish	Outside	0 14 0
Fine do.	"	0 16 0
Fine Copal	"	0 18 0
Pale Copal	"	1 0 0
Pale Opal Carriage	"	1 4 0
Best do.	"	1 12 0
Floor Varnish	Inside	0 18 0
Fine Pale Paper	"	0 18 0
Fine Copal Cabinet	"	1 2 0
Fine Copal Flatting	"	1 0 0
Hard Drying Oak	"	0 18 0
Fine Hard Drying Oak	"	0 19 6
Fine Copal Varnish	"	1 0 6
Pale do.	"	1 12 0
Best do.	"	1 2 6
Best Japan Gold Size		1 12 6
Best Black Japan		0 10 0
Oak and Mahogany Stain (water)		0 12 0
Brunswick Black		0 7 6
Berlin Black		0 14 0
Knotting (patent)		0 15 0
French and Brush Polish		0 12 0
Liquid Dryers in Terebene		0 9 0
Cuirass Black Enamel		0 7 0

GLASS.

ENGLISH SHEET GLASS IN CRATES OF STOCK SIZES.

ORDINARY GLAZING QUALITY (O.Q.) AND SELECTED GLAZING QUALITY (S.Q.).

PER FOOT SUPER.

In sizes not exceeding 80 in. long or 48 in. wide or 110 united inches.

	O.Q.	S.Q.
18 oz. in 300 ft. cases	2¾d.	2¾d.
24 oz. " 200 ft. "	3¼d.	4d.
26 oz. " 200 ft. "	3¾d.	4¼d.
32 oz. " 200 ft. "	5¼d.	6¾d.
24 oz. " 300 ft. "	3¼d.	3¾d.
26 oz. " 300 ft. "	3¾d.	4¾d.
32 oz. " 300 ft. "	5¼d.	6¼d.
18 oz. Obscured Sheet		5½d.
24 oz. Obscured Sheet		6½d.
Fluted, 21 oz.		9d.
Enamelled, 18 oz.		5½d.
" 24 oz.		6¾d.

Extra price according to size and substance for squares cut from stock.

ENGLISH ROLLED PLATE AND FIGURED CATHEDRAL, ETC., IN CUT SIZES. Per ft.

Rolled plate, ¼ in.	5½d.
Rough cast double rolled, ⅛ in.	6½d.
Rough cast double rolled, ¼ in.	6¾d.
Figured rolled, and Cathedral, white	6¾d.
Figured rolled and Cathedral, tinted	9½d.
Rolled Sheet	6d.
Reeded, Broad Reeded, Cross Reeded and Chevron Reeded, ¼ in. thick	0 10½

Rolled plate is the same price as rough cast double rolled.

	Per ft. s. d.
Wire Rolled, ¼ in. thick	0 9½
Wired Cast, ¼ in. thick	0 9½
Georgian Wired Cast	0 10
"Calorex" Sheet, 21 oz.	2 6
" 32 oz.	4 0
" Cast, ¼ in. thick	0 10
" " ⅛ in. thick	1 0
" " ¼ in. thick	1 2
Non Actinic Glass, ¼ in. thick	0 9½
" " " ⅛ in. thick	1 0
" " " ¼ in. thick	1 2

"VITA" GLASS.

	Per ft. s. d.
"Vita" Plate Glass, about $\frac{5}{32}$ thick:	
To 7 ft. super	5 0
Over 7 ft. super	7 6
"Vita" Sheet Glass, about 18/20 oz.	2 0
Cathedral "Vita" Glass:	
⅛" thickness	2 0
$\frac{5}{32}$" "	3 0
$\frac{3}{16}$" Georgian Wired "Vita" Glass	3 6

LEAD, &c.

(Delivered in London.)	Per ton. £ s. d.
LEAD.—Sheet, English, 4 lb. and up	34 10 0
Pipe in coils	34 0 0
Soil pipe	39 10 0
Compo pipe	41 5 0

NOTE.—Country delivery, 20/- per ton extra, lots under 3 cwt. 4/- per cwt. extra and over 3 cwt. and under 5 cwt., 2/6 per cwt. extra. Cut to sizes, 4/- per cwt. extra.

Old lead, ex London area, at Mills ..... per ton £19 10 0

BUILDING TRADE WAGES IN SCOTLAND

Following are grade rates authorised by the Scottish N.J.C. from February 1. Every endeavour is made to ensure accuracy, but we cannot be responsible for errors that may occur.

Grade Classification	A	A¹	A²	A³	B	B¹
Craftsmen	1/9½	1/9	1/8½	1/8	1/7½	1/7
Labourers	1/4½	1/4	1/3½	1/3½	1/2¾	1/2½

Aberdeen	A	Dumfriesshire	A²	Inverness	*	Perthshire	A²
Ayrshire	A	Dundee	A	Inverurie	A¹	Peterhead	A¹
Banff	B	Dunoon	A	Kincardineshire	A²	Renfrewshire	A
Berwickshire	A²	East Fife	A	Kinross-shire	A	Rothesay	A
Bridge of Allan	A	East Lothian	A	Lanarkshire	A	Roxburghshire	A²
Broughty Ferry	A	Edinburgh	A	Midlothian	A	St. Andrews	A
Clackmannanshire	A	Fifeshire	A	Monifieth	A	Selkirkshire	A²
Doune	A	Forfarshire	A²	Moray and Nairn	B	Stewartry	A²
Dunblane	A	Glasgow	A	Newport	A	Stirlingshire	A
Dumbartonshire	A	Greenock	A	Peeblesshire	A²	Stornoway	A²
Dumfries	A¹	Hamilton	A	Perth	A	Tayport	A
						West Lothian	A

* This town has its own rates: Masons, 1/7½; Carpenters, 1/7½; Slaters, 1/7½; Plumbers, 1/8; Plasterers, 1/8½, but 1/9 is paid owing to the scarcity at present; Painters, 1/7½ and Labourers, 1/3.

The information given in this table is copyright. Rates of wages in England and Wales are given on page 272.

THE SCOTTISH BUILDER

NEW BUILDINGS

AYRSHIRE.—ADDITIONS.—Messrs. James Miller & Son, 15, Blythswood-square, Glasgow, are the architects for additions at the mansion house of Kildonan, South Ayrshire.

GLASGOW.—BUILDING.—Plans prepared for new buildings for Maitlands Works, Ltd. The architect is Mr. James W. MacDonald, The Inches, Balmaldy-road, Bishopbriggs.—The architectural staff of Messrs. William Crockett & Son, Ltd., 62, Darnley-street, prepared plans for erection of block buildings.—Plans prepared by the architectural staff of Messrs. Campbell, Dawson & Sons, Ltd., 79, Viewpark-street, for new office buildings.

KELSO.—BUILDING.—The Council has passed plans: Geo. Henderson, Ltd., subpower station; A. & J. B. Turnbull, motor repair workshop.

BRITISH MADE
Henderson
Guaranteed
We invite you
SLIDING DOOR GEAR
to send for our technical representative and our guide and plan book—free.
Competitive in price although the best.
P. C. HENDERSON LTD., BARKING, ESSEX
Telephone: RIPPLEWAY 3406 (Prvt. Branch Ex.).

NEW COMPANIES

THE particulars quoted below have been compiled by Messrs. Jordan & Sons, Ltd., Company Registration Agents, of 116 and 117, Chancery-lane, W.C.2, from the documents available at the Companies Registry.

RICHARD J. AUDREY, LTD. (362895).—Registered August 20. Sanitary, heating and ventilating engineer. Nominal capital: £10.000. R. J. Audrey, 239, Kilburn Park-rd., N.W.6.

JOHN HOSEA AND SON, LTD. (362991).—Registered August 26. Plumber and heating engineer. 151, Evington-road, Leicester. Nominal capital: £3,000.

THOMPSON AND THROWER, LTD. (362916).—Registered August 21. Eden-street, Kettering. Plumbers, glaziers, fire protection experts, etc. Nominal capital: £500.

C. HAINSWORTH AND SON, LTD. (362981).—Registered August 26. 27, St. Anns-street, Leeds. Joiners, builders, shopfitters, etc. Nominal capital: £500.

WESSEX HOUSING SOCIETY, LTD. (362964).—Registered August 23. 3, Frederick-place, Weymouth. Nominal capital: £2,500.

S. BROWN AND CO. (WEYBRIDGE), LTD. (362933).—Registered August 22. Hanger Hill, Weybridge, Surrey. Builders and general contractors, etc. Nominal capital: £800.

LAW REPORTS

SUCCESSFUL APPEAL BY LIFT MANUFACTURERS.

COURT OF APPEAL.
Before LORDS JUSTICES MACKINNON, CLAUSON AND GODDARD.

Kerry v. The Keighley Electrical and Engineering Co., Ltd.

In this case the defendant company appealed from the judgment of Mr. Justice Atkinson, in the King's Bench Division, awarding the plaintiff, Mr. Arthur Charles Kerry, of Sandhurst-road, Kingsbury, Middlesex, £425 damages for personal injuries which he sustained through falling down a lift shaft owing to the alleged negligence of the defendants.

The plaintiff, at the time of the accident, was employed by the tenant of a third-floor flat at premises in Shoot-up-hill, London, in which premises the defendants had installed and maintained an automatic lift. On the day of the accident, wishing to use the lift in order to go down to the street, plaintiff proceeded backwards towards the lift, and putting his arm behind him, opened the gate, and thinking that the lift was in position, whereas it was not, stepped backward into the shaft and sustained his injuries. His case was that the defendants were liable by reason of a defect in the lift apparatus.

The defendants denied being guilty of negligence and pleaded that the plaintiff himself was guilty of contributory negligence in proceeding to enter the lift without first looking to see if it was then in position.

At the conclusion of the arguments, the Court allowed the appeal.

Lord Justice Mackinnon, in delivering judgment, said that, *prima facie*, one could not imagine a clearer case of negligence than what the plaintiff admitted he did when he stepped backward into the shaft. The trial judge had found that, in these days of automatic lifts, that was not negligence, but he (the Lord Justice) did not agree with the trial judge. In his opinion, the appeal should be allowed and judgment entered for the defendant company.

The other members of the Court concurred and the appeal was accordingly allowed and judgment entered for the defendants with costs.

An application for leave to enable the plaintiff to appeal to the House of Lords was refused.

WORKMAN'S ACTION AGAINST EMPLOYER FOR ALLEGED BREACH OF STATUTORY DUTY.

HOUSE OF LORDS.
Before the LORD CHANCELLOR and LORDS ATKIN, THANKERTON, ROMER and PORTER.

Lewis v. Denye.

This case, which raised questions of importance to employers under Section 10 of the Factory and Workshop Act, 1901, and Regulation 23 of the Wood-working Machinery Regulations, 1922, came before the House on the appeal of the plaintiff, Mr. Leonard Lewis, an infant suing by his father, from the judgment of the Court of Appeal after affirming the judgment of Mr. Justice Tucker in favour of the defendant, Mr. Denye, the owner or occupier of a wood-working factory at Birkenhead.

The plaintiff in June, 1937, when in the employ of the defendant and occupied in cutting wood by means of a power-driven circular saw, severely injured his left hand owing to its coming into contact with the rotating saw, and he accordingly brought the action against the defendant for damages upon the ground that he was liable for breach of statutory duty.

It appeared that the proper method of working was for Lewis to stand facing the front of the revolving saw and by the means of a push-stick (as provided for by Regulation 23 (2) of the Wood-working Machinery Regulations, 1922) to push against the saw each length of wood to be cut.

Mr. Justice Tucker found that the accident occurred because Lewis, instead of using the push-stick in order to remove one of the several portions of a length of wood from the saw-bench, did so with his left hand, which came in contact with the saw and which was the real and effective cause of the accident, and although he found that the saw was not securely fenced as required by Section 10 of the Factory and Workshop Act, 1901, he nevertheless decided in favour of the defendant and for whom he gave judgment.

The Court of Appeal, on the plaintiff's appeal, affirmed the judgment of Mr. Justice Tucker, and from this result plaintiff now again appealed to the final tribunal.

The appeal was again dismissed.

The Lord Chancellor (Lord Simon) in giving judgment, said he agreed with the decision and finding of Mr. Justice Tucker that what Lewis did when the accident occurred was "highly dangerous," and which was the real and effective cause of the accident. Quite apart from any breach by the workman of Regulation 23 negligence on his part was clearly made out.

The question whether the obligation to keep dangerous machinery securely fenced, which was imposed by Section 10 of the Act of 1901, permitted the injured workman to hold the employer liable even though the injury was caused or contributed to by his own negligence was decided in a recent case before that House, and confirmed the view that negligence in the workman causing or contributing to the accident was a defence to an action where it was alleged that the defendant occupier had failed to fence securely. He entirely accepted the conclusion in that case as applying to the construction of Section 10 of the Factory and Workshop Act, 1901, and that the appellant's "highly dangerous" act was not such an act as his familiarity with the machine might justify or condone.

An act of that quality contributed to the appellant's injury so as to exonerate the respondent from liability.

That was sufficient to dispose of the appeal, and he would be extremely unwilling to make the present case the occasion for a final pronouncement on the issues raised on Section 10 of the Act of 1901. In the circumstances it was not necessary to do so. The appeal must be dismissed.

The other learned Lords concurred.

Mr. Hemmerde, K.C., Miss E. A. Macdonald, and Mr. A. D. Pappworth appeared for the appellant; and Mr. H. Shawcross, K.C., and Mr. G. Blackledge for the respondent.

DON'T TENDER UNSUCCESSFULLY

SECURE CONTRACTS WITH

THE STEEL SCAFFOLDING CO., LTD.
"BIG BEN TOWERS." 23, OATLANDS DRIVE, WEYBRIDGE, SURREY.
'Phone: Walton-on-Thames 614 and 615.

TENDERS

The Editor welcomes authentic information for this feature from architects, surveyors or contractors. Items should reach 4, Catherine-street, Aldwych, W.C.2, not later than Wednesday morning.

Tenders for A.R.P. work will be found under "A.R.P. Schemes."

* Denotes *accepted.*
† Denotes *provisionally accepted.*
‡ Denotes *recommended for acceptance.*
§ Denotes *accepted subject to modification.*
¶ Denotes *accepted by H.M. Government departments.*

Bath.—Works for E.C. : Installation of electric light at schools : *H. L. Bush & Co., Walcot parochial senior mixed, and Walcot parochial infants'; *J. Lambert & Sons, Weymouth House; larder at West Twerton school, *J. W. Knight & Son.

Bedfordshire.—Cold storage room at public assistance institution, Biggleswade, for C.C. Sydney C. Jury, architect, County Architectural Department, Bedford : *Bedford Refrigeration Co., Ltd., 21, The Broadway, Bedford, £135.

Boston.—Additions to canning factory, for United Canners, Ltd. : *H. H. Vamplew, Boston; and *R. Stevenson, Norwich.

Castleford.—Privy conversions at properties, for U.D.C. T. E. Birtwisle, Sanitary Inspector : *J. L. Rodger & Sons, Ltd., Eastfield-wks., Eastfield-la., Castleford, £905 12s. 4d.

Cleghorn.—Houses, etc., for Lanarkshire C.C. Samuel McColl, County Housing Architect, Hamilton. Excavation, brick and building : *Bryce & Symington, Ltd., Carluke; joinery, carpentry and ironmongery : *Gilchrists, Lesmahagow; plumber work and sanitary engineering : *J. Laing & Sons, Ltd., Lanark; roofing and roughcast : *W. Dodds Bertram, Lesmahagow; plaster, lathing : *J. Bertram & Sons, Ltd., Motherwell-Wishaw; electrical fittings and installation : *Neil Thomson, Motherwell-Wishaw; painting and glazing : *G. Law & Sons, Ltd., Bellshill.

Corby.—Forty houses, Oakley-road site, for U.D.C. *Richmond Bros., Corby, £19,842 houses, £3,758 for roads, drainage, etc. (In lieu of tender withdrawn.)

Coventry.—896 houses, in groups of approx. 150 houses, for T.C. D. E. E. Gibson, M.A., A.R.I.B.A., City Architect, 1a, Warwick-row : *H. Clarke & Son, Ltd., *T. Dalton & Co., Ltd., *Garlick's, Ltd., *J. G. Gray, *E. Harris & Son, *W. H. Jones & Son, Ltd. (All of Coventry.) Cost, £560 to £663 per house.

Crewe.—Approx. 12 miles of spun cast-iron mains with three overhead crossings in connection with Eaton water supply scheme, for T.C. L. Reeves, M.I.M. & Cy.E., B.E. Herbert Lapworth & Partners, consulting engineers, 18, Victoria-st., London, S.W.1 : ‡Constable, Hart & Co., Ltd., Broadway-bldgs., Broadway, London, S.W.1.

Glasgow.—Works at schools for Corporation. J. MacNab, architect, Education Authority Offices, Bath-st., Blythswood : *painting*, Elder Park, *J. MacLaren & Co., Govan, £126 9s.; Holmlee Public, *R. Morton & Sons (Glasgow), Ltd., £107 7s. 9d.; Golfhill Public, *E. S. Lawrie & Co., Glasgow, £128 16s. 10d.; Queen's Park secondary, *R. Morton & Sons, Glasgow, Ltd., £126 2s. 7d.; Haghill Public, *R. Bruce & Son, Glasgow, £108 19s. 2d.; Queen's Park secondary, Battlefield-avenue, *R. Morton & Sons (Glasgow), Ltd., £107 2s. 9d.; *roof asphalt work*, Townhead public school, *E. S. Lawrie & Co., Glasgow, £109 15s. 4d.; Sacred Heart (Boys), *National Asphalt & Concrete Co., Ltd., Glasgow, £127 19s.

Glasgow.—Service flats for Service Flats (Glasgow), Ltd. R. Ewan, architect and quantity surveyor, Wellington-chas., Wellington-st., Blythswood. *J. Brown, Glasgow.

Grantham.—227 houses. for T.C. : *R. Huftwayt, Nottingham, £128,487.

Guisborough.—Three communal domestic surface shelters at South Lackenby, for U.D.C. F. A. Russell, A.F.A.S., S. :—

Alfred Bailey, Middlesbrough	£520	0	0
J. Sigsworth, Guisborough ...	475	0	0
H. E. Meadows, Guisborough	343	18	6
F. J. Willis & Son, Hinderwell	285	11	3
Walter Thompson, Northallerton	262	0	0

(Accepted tender not stated.)

Kidsgrove.—Five communal shelters, for U.D.C. H. W. Crowther-Green, E. and S. :

J. Cash, Wellington-rd. ...	£872	10	0
J. W. Walton, Kidsgrove ...	797	0	0
*W. E. Jones, Lewin-st., Middlewich	788	10	0

Lanarkshire.—Painting work for C.C. Painting works at sheds at Cairngryffe Quarry : *Direct Labour Works Dept., Motherwell, £423 1s. 2d. Masonry work at Lintfieldbank, near Coalbourn : *W. B. Fairservice. Painting work at Roadmeetings Hospital, Carlake : *Direct Labour Dept., £147 10s.

¶**London (Air Ministry).**—Contracts placed for week ended August 31 :—

Heating work : Brightside Foundry and Engineering Co., Ltd., Birmingham ; and Thorpe Bros., Ltd., London.

Land levelling : Earth Movers, Ltd., Tettenhall, Staffs.

General maintenance work : John Cawley, Ltd., Nottingham ; A. & B. Hanson, Ltd., Southall ; T. F. Howells, Ltd., Caerphilly, Glam. ; Frank Warburton & Son, Warrington ; Alexander Gordon, Laurencekirk, Kincardineshire ; J. Cryer & Sons, Fleetwood ; R. Costain & Sons (Liverpool), Ltd., Liverpool ; and John Hunt, Ltd., Gosport.

Electrical work : W. T. Henley's Telegraph Works Co., Ltd., Dorking ; and R. Finlayson & Co., Wick.

Building work : J. Gerrard & Sons, Ltd., Manchester.

¶**London (War Dept.).**—Contracts placed for week ended August 31 :—

Cumberland : Miscellaneous work, Brown, Fraser & Co., Ltd., 24, Durward-av., Glasgow, S.1.

Hampshire : Building work, A. P. Bowley & Sons, Liss.

Renfrewshire : Building work, Speirs, Ltd., 257, West George-st., Glasgow, C.2 ; and Wm. Taylor & Son (Glasgow), Ltd., Boden-st., Glasgow, S.E.

Kent : Miscellaneous works, J. J. Clayson & Son, Ltd., Lyminge, Folkestone.

Hampshire : Miscellaneous works, Thos. Higgs, Woking.

Co. Down : Hutting, Stewart & Partners, Ltd., Ormeau-rd., Belfast.

Co. Down : Building work, D. McCurle & Son, Arbour-st., Belfast ; and J. & R. W. Taggart, Hapefield-av., Belfast.

Newcastle-on-Tyne.—Fire-escape staircase at St. Mary Magdalene's Home, for City Council. P. Parr, City E. : *M. Aynsley & Sons, Ltd., Heber-st., Newcastle-on-Tyne, £258 16s. 6d.

Royston.—Exterior painting of 64 houses in Newton-av., Station-rd., for U.D.C. A. H. Clark, S. Quantities by S. : *S. E. Cresswell & Sons, Wombwell, Barnsley.

Saddleworth.—Painting 49 houses on Carrcote, Delph, Heathfields, Uppermill, etc., estates for U.D.C. *J. Hudson, £115 5s. 6d.

Sheffield.—Works for T.C. Supply of 24-in. concrete-lined cast-iron pipes : *Staveley Coal and Iron Co., Ltd., near Chesterfield ; Extensions to coal sidings at Neepsend generating station : *T. W. Ward, Ltd., Albion Works, Savile-st., £1,700 ; meter dept., Sheaf-st. depot : *Public Works Dept., £2,165. (Rest of Sheffield.)

Stone.—Works required in connection with modified Barlaston and Tittensor sewerage scheme, for R.D.C. *Thoman Coates (1927), Ltd., Victoria-bldgs., Silver-st., Bury, £7,680 10s. 8d.

Stewartry.—Adaptation at Laurieston Hall, for C.C. : Mason work, *J. N. Paterson & Sons, Dumfries, £82 7s. 6d. ; joiner, *W. M'Naught, Ltd., Castle-Douglas, £461 15s. 3d. ; plaster and cement work, *Thos. Robertson & Sons, Castle-Douglas, £121 1s. 9d. ; plumber work and domestic hot-water installation, *P. Drummond & Son, Ltd., Castle-Douglas, £648 ; heating and domestic hot-water generating plant, *Donald Smith & Co., Glasgow, £788 ; electrical work, *W. D. Erskine, Dumfries, £592 18s. ; painter work, *M. M'C. Brodie & Son, Castle-Douglas, £203 17s.

Stretford.—Surfacing concrete roadway at town hall, for T.C. *Penmaenmawr and Trinidad Lake Asphalt Co., Ltd.

Sunderland.—Alterations to Phœnix Inn. E. M. Lawson, architect, Barras-bldgs., Barras Bridge, Newcastle-on-Tyne : *Tate & Holmes, Benwell Village, Newcastle-on-Tyne.

Westminster.—Repairs and decorations work on housing estates for City Council : *Yeomans & Partners, Ltd., £521 1s. 2d. ; *Hutchings & Keasley, Ltd., £153 3s. 4d. ; *Sims & Russell, £869 ; *Walter Lilley & Co., Ltd., £500 7s.

Wishaw.—Alterations and additions at Wishaw Roman Catholic School. J. Stewart, architect, Albert-st., Motherwell-Wishaw. Brick, building, joinery, carpentry and ironmongery. *Scott & Co., Ltd., Motherwell-Wishaw, £1,234 15s. 8d. Plumber and sanitary engineering : *Lanarkshire County Direct Labour Dept., Motherwell-Wishaw, £171 6s. 8d.

Wolverhampton.—Primary sub-station for T.C. H. B. Robinson, B.E. *H. Willcock & Co., Ltd., Darlington-st., Wolverhampton.

Worcestershire.—Electrical installations at (a) Hill and Cakemore senior council school, Bromsgrove, (b) Pershore junior school for E.C. H. Rowe & Son, Acting County Architects, Foregate-st., Worcester. *(a) G. William Bros., 44, Enville-st., Stourbridge, £452 ; *(b) S. W. S. Electric Power Co., Ltd., Mucklow Hill, Halesowen, £210.

Auxiliary Rescue Parties, Rochdale.

Rochdale Master Builders' Association have offered to provide about 160 men to help in auxiliary rescue parties. A scheme has already been prepared by the Borough Surveyors and approved by the Emergency Committee.

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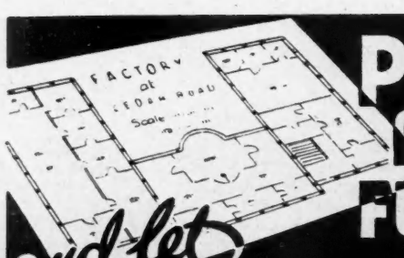

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